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ORIGINAL ARTICLES.

AN ANALYSIS OF TWO HUNDRED AND SEVEN CASES OF CARCINOMA OF THE BREAST.

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UP to May of the present year, I had seen in private or in hospital practice, or in consultation, and kept a record of, 14 cysts and 251 neoplasms of the female breast. Of the cysts, 10 were retention cysts—6 having been evolution and 4 involution cysts, while of the new growths, 207 were carcinomata, 19 sarcomata, 24 fibromata, and 1 was an adenoma. Hence, 82.47 per cent. of the neoplasms were carcinomatous, a proportion which closely corresponds with the records of other surgeons. Thus, of 481 tumors observed by Bryant,[1] 400, or 83.16 per cent., were carcinomatous, while of 440 from the practice of Billroth,[2] 375, or 85 per cent., were of the same nature. The object of the present communication is to present a succinct analysis of my notes of the carcinomatous growths, with the hope of throwing additional light upon their life history and proper treatment.

I have met with the disease as early as the twenty-fifth, and as late as the seventy-second year, the average being 47.6 years. Of the 207 cases,

6	first appeared between		20	and	29	years	of age.
39	"	"	30	"	39	"	"
78	"	"	40	"	49	"	"
62	"	"	50	"	59	"	"
21	"	"	60	"	69	"	"
1	"	"	70	"	79	"	"

Of the entire number, not one was observed during the developmental state of the mamma; 45, or 21.73 per cent., appeared during the period of its greatest activity; and 162, or 78.26 per cent., began during its functional decline.

121 women, or 58.45 per cent., were menstruating at the date of the development of the disease, and only 8.21 per cent. of the entire number had been irregular in the performance of that function.

Of 197 women in whom the social condition is noted, 175, or 88.83 per cent., were or had been married, and 22, or 11.17 per cent., were single. Of 154 in whom it is mentioned, 133, or 86.36 per cent., had borne children, and of these, rather more than nine-tenths were prolific and had nursed their children; while 21, or 13.64 per cent., were sterile. In only one did the tumor appear during pregnancy, and in none during lactation. The general health of the patients when they first came under observation was excellent in 69.56 per cent., indifferent in 17.39 per cent., and bad in 13.04 per cent., so that less than one-third were injuriously influenced by the progress of the affection. In only 10, or 4.83 per cent., was it inherited in the direct line of descent—that is to say, from parents, grandparents, or great-grandparents.

The disease was ascribable to traumatism in 20, or 9.66 per cent. of the 207 cases; but in only 9 of these did the tumor develop within six months. Of the 133 parous women, 11, or 8.27 per cent., had suffered from puerperal mastitis, but in only 2 was it clear that the tumor started from the lump or induration left by the inflammation. In 5 cases, or 2.41 per cent., there was antecedent nonpuerperal mastitis, and in 4 of these the disease developed at the site of the inflammation. In 5 cases, or 2.41 per cent., the nipples had been the seat of crusts and scales for several years—in one case for thirty-two years—before the appearance of the tumor. In 6 cases, or 2.9 per cent., it began as Paget's disease of the nipple, or as malignant papillary dermatitis.

In reviewing the foregoing facts, it is evident that my personal experience throws little light upon the causation of carcinoma, although it differs in several important points from views which have been engrafted upon, and are still held by the profession. The general nutrition of the patients was not nearly so bad as many teachers would lead us to believe, since more than two-thirds of my patients enjoyed capital health, and their appearance did not denote that they were suffering from so grave a malady. The inheritance of the disease, which is believed to be so common, not only by the laity but by medical men, is not supported by my figures. I do not mean by inheritance a family history of cancer among relatives of carcinomatous subjects, as aunts, uncles, cousins, brothers, and sisters, but an undoubted history of transmission by direct descent, that is, from parents, grandparents, or greatgrandparents. In studying the subject of cysts of the breast, I find that in not less than 5, or 7 per cent. of 70 subjects of retention cysts, there was a clear history of carcinoma in the ancestors, the mothers of two and the grandmothers of two having died of carcinoma of the breast, and the grandmother of the fifth having perished from carcinoma of the uterus. These interesting facts merely indicate to my mind that a peculiarity of structure is transmitted, through which, in the one case, the contracting fibrous stroma of the breast irritates the glandular elements, and incites an atypical growth of the epithelium, thereby giving rise to carcinoma, while in the second case the contracting fibrous tissue constricts some of the ducts, through which cysts develop. The influence of puerperal mastitis, upon which much stress has been laid, was not marked, when it is considered that in less than one per cent. was it demonstrable that

[1] Practice of Surgery, 4th Amer. ed., pp. 769 and 773.
[2] Die Krankheiten der Brustdrüsen, p. 134.

the tumor appeared at the site of the inflammation, so that if it were a factor at all, it was less efficient than was nonpuerperal mastitis. Scaly nipples, by obstructing the mouths of the ducts, may be precursors, but the evidence on this point is too limited to be of any value. Paget's disease should not be included among the causes, since histological investigations show that it is a malignant inflammation of the skin of the nipple and areola secondary to carcinoma of the orifices of the milk ducts, so that carcinoma is actually present, although in an unusual situation. Traumatism appears to be the most common of all the efficient causes, and I presume that no one will deny that it does provoke an atypical growth of epithelium in involuting breasts which results in carcinoma. There certainly can be no connection between the social condition of the patients and childbearing, since the proportion existing between married and single women, and between parous and sterile women suffering from the disease is about the same as in health. From these statements I believe that age, which simply denotes senility of the tissues of the breast, is the only factor which predisposes to the occurrence of carcinoma; that injury is the only proven existing cause; and that hereditary transmission tends to perpetuate the disease.

With the exception of 5 cases in which several tumors existed in one breast, the disease began as a solitary growth, in the right breast in 101, and in the left in 106. It was seated in

The upper hemisphere in	. . .	4	cases.
" lower " "	. . .	7	"
" outer " "	. . .	8	"
" inner " "	. . .	6	"
The upper and outer quadrant in	. .	66	cases.
" " " inner " "	. .	19	"
" lower " outer " "	. .	10	"
" " " inner " "	. .	12	"
The vicinity of the nipple and areola in		75	"

Hence, the seats of election were the upper and outer portions of the gland, and the immediate vicinity of the areola and nipple.

In one case a scirrhous carcinoma occupied one breast, and a fibroma its fellow, while in a second case the right breast was the seat of three fibromata, and the left contained three fibromata and a scirrhous carcinoma.

The nipple was retracted in 108, or 52.17 per cent. of the entire number, the large proportion being due to the fact that in 75 the tumor was seated near the nipple and areola. In 15, or 7.24 per cent., there was a spontaneous discharge from the nipple, the fluid being, as a rule, either watery and bloody, or thick and lactescent; while in two additional cases a milky fluid—the so-called cancer-juice—could be expressed. In one-third of the cases the discharge preceded the detection of the tumor.

In eight-tenths of the cases, pain of a sharp, intermittent character was experienced; in about 15 per cent. there was merely a sensation of discomfort; while in about 5 per cent. there was no suffering whatever. In exceptional instances it was the first symptom that attracted attention.

Invasion of the skin, the earliest sign of regional infection, was met in 155, or 74.87 per cent. of the 207 cases. The cutaneous invasion was characterized by discoloration or adhesion in 78, or 37.68 per cent.; by the formation of tubers or nodules in 33, or 15.94 per cent.; and by ulceration in 44, or 21.25 per cent. In only one case did the tubers occupy the entire surface of the chest, and undergo atrophic changes, thereby constituting the affection known as *cancer en cuirasse*. In four of the cases the lymphatic vessels of the skin constituted elevated, convex ridges, as large as crows' quills, but in three of these they were filled with lymph-cells, and in only one were they plugged with polymorphous epithelial cells.

Infection of the skin was met with as early as two weeks, and as late as twenty-nine months, the average having been 12.6 months. Adhesion occurred, on an average, in 9.5 months; discoloration in 10.1 months; nodules in 12.3 months; and ulceration in 15.8 months.

Immobility of the breast on the chest, or invasion of the pectoral fascia or muscle, was witnessed in 31, or in 15 per cent. of the cases. It occurred as early as the second, and as late as the twenty-seventh month, the average having been 16.9 months. Distinct nodules were also found in 20.93 per cent. of my operations in the pectoralis major muscle, and in one case in the pectoralis minor muscle, and in the periosteum of the sixth rib.

The opposite breast was invaded in 8, or 3.86 per cent. of all cases, the original seat of the disease having been the right mamma in 6. It was a late sign, appearing, on an average, at 21.5 months, although it was witnessed as early as five, and as late as fifty-eight months. In all of these cases it was preceded by invasion of the skin and glands associated with the first growth, and in two of these ulceration was present. Although I have included implication of the opposite breast among the signs of local extension of the disease, it is probable that in most of the examples it was an independent outbreak.

Infection of the axillary lymphatic glands was detected in 136, or 65.70 per cent. of all cases; and along with these the supraclavicular glands were involved in 15, the subclavicular in 3, and the cervical in 2. This statement does not, however, indicate the real frequency of glandular invasion, since, in my late operations, in which I always clear out the axilla, I have found that these bodies were carcinomatous in 95.35 per cent. of all instances, and Kuester[1] states that, of 117 similar operations, in only 2 was there no axillary disease. I have witnessed glandular involvement as early as three weeks, and as late as twenty-nine months, but the average date of its detection was 13.2 months. In two of my cases it was discovered by the patients before the tumor was perceived.

My opportunity for making post-mortem examinations of women dead of carcinoma have been so few that they are not of much value. In six autopsies of subjects in whom the disease had pursued a natural course, metastatic deposits were found in all.

[1] Deutsche med. Wochenschrift, 1883, No. 17, p. 258.

One was a case of atrophying scirrhus that had lasted for seventeen years and seven months. The remaining five died at periods varying from twenty months to five years and two months, the average date of death having been thirty-seven months and twenty-four days.

Of my first 100 cases, the subsequent histories are unfortunately most imperfect. Of these I can only say that 7 ran a natural course, and that their average life was 33.6 months, and metastases were discovered in the 3 cases which were inspected post-mortem; and that 55 were subjected to operation, of which 1 died; there was no recurrence in 1 in two years; 2 died with recurrence, their average life having been 44.6 months, and 9 recurred, on an average in 7 months, but their further history could not be traced. Hence, 91.75 per cent. of the cases were marked by local reproduction, and I was unable to find a single permanent recovery. In all of these cases the old operation was performed, that is to say, the nipple and a portion of the skin were circumscribed by two incisions, the mamma was dissected out of its bed of fat, any glands that were perceptible in the axilla prior to the operation were removed, and the wound was nicely approximated by sutures. These results led me to abandon the partial and inadequate operation for the thorough and complete procedure which I instituted in my second series of cases.

Of the succeeding 107 cases, I am enabled to speak with certainty in 53. Of these 10 died without, and 43 were subjected to, operation. Of the 10 which ran a natural course, all were dead, with visceral deposits in 3 as demonstrated post-mortem. These patients lived, respectively, for nine, twelve, eighteen, twenty, twenty-five, thirty-two, thirty-eight, fifty, sixty-two, and seventy-four months, their average life having been 34 months.

Of the 43 operations, 2 died—1 from fat embolism, and 1 from pneumonia, and in 5 the patients were lost sight of after recovery. Of the remaining 36, 12 died with local reproduction; 1 died with recurrence and metastases; 2 were alive with recurrence; 1 was alive with recurrence and metastases; 20 remained well, or died of some intercurrent disease, but 3 had had recurrences.

It will thus be seen that local reproduction was met with in 52.77 per cent. of the operations. Out of 17 of these 19 cases in which the date could be fixed, 10 recurred in six months, 4 in from seven to twelve months, and 3 in from thirteen to seventeen months, the average having been 7 months. The recurrent disease was seated in or near the cicatrix in 5, in the axilla alone in 8, and in both localities in 6.

Of the thirteen patients who died with recurrence the average life was 25 months, the shortest having been six and the longest sixty months. Hence, the life of these patients was shorter by nine months than was that of the ten patients who were not interfered with.

Of the 20 subjects who remain well, or who perished from other affections without recurrence, 5 were dead and 15 were alive. Of the former,

1	lived	for	7	years	and	10	months.
1	"	"	.....			23	"
1	"	"	.....			21	"
1	"	"	.....			17	"
1	"	"	.....			2	"

Of the living,

1	remains	well	for	8	years	and	3 months.
1	"	"	"	8	"	"	2 "
2	remain	"	"	5	"	"	11 "
1	remains	"	"	3	"	"	5 "
1	"	"	"	3	"	"	1 "
1	"	"	"	2	"	"	9 "
1	"	"	"	2	"	"	8 "
1	"	"	"	2	"	"	1 "
1	"	"	"	1	"	"	8 "
1	"	"	"	1	"	"	6 "
2	"	"	"	.....			12 "
1	"	"	"	.....			8 "
1	"	"	"	.....			6 "

If the permanent recoveries were based upon freedom from recurrence after seventeen months, the latest period which I have observed, these 20 cases would show 14 cures; but in determining the date at which recovery may be said to be definite, surgeons accept the dictum of Volkmann that a cure is rendered almost certain if the patient has survived over three years without local or general recurrence after the last operation, or if she has died of some intercurrent malady under the same conditions. Applying this test, it will be seen that of the 36 operations in which the result could be traced, 7, or 19.44 per cent., recovered permanently. The average time of cure was 6 years and 1 month, and the disease had existed before operation, on an average, for 9⅓ months. When I state that in all of my operations the axilla was cleared out, and that in 5 of these 7 cures the axillary glands were largely involved, the degree of success must be considered remarkable. As only 2, or 4.65 per cent., of the subjects died from the immediate effects of the operation, and 19.44 were permanently relieved, the propriety of removing the glands along with amputation of the breast cannot admit of question. That the axilla should be cleared out in every instance in which infected glands cannot be detected prior to operation, is clearly shown by the fact, that of sixteen of my cases of this nature, in only two were the glands not diseased. Hence, my experience demonstrates that the glands may be expected to be involved in 87.5 per cent. of all cases in which they cannot be felt through the integuments of the axilla. In Kuester's[1] practice the proportion of glandular implication under similar circumstances is somewhat larger, as his last sixty-five cases indicate that the glands were infected in fifty-seven, or nearly 92 per cent.

The operation which I perform, and which I was the first to advocate in my *Treatise on Tumors of the Mammary Gland*, published in 1880, is a thorough one, the object being to remove all tissues which the experience of centuries has demonstrated serve as the sources of recurrence. As the operation will be fully described and illustrated in an early number of *The American Journal of the Medical Sciences*, it need only be stated at this time that, no matter

[1] Deutsche Zeitschrift für Chirurgie, Bd. xxvi. p. 143.

what the situation of the tumor may be, or whether glands can or cannot be detected in the armpit, the entire breast, with all the skin covering it, the parammary fat, and the fascia of the pectoral muscle are cleanly dissected away, and that the axillary contents are extirpated. It need scarcely be added that aseptic precautions are strictly observed.

THE TREATMENT AND PROPHYLAXIS OF ANGINA TONSILLARIS.

BY H. v. HOFFMANN, M.D.,
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THE tonsils are (lymphatic) glands, the numerous ducts (lacunæ and follicles) of which undergo many changes, namely, they become distended and elongated, and are thereby converted into cavities filled with viscid secretion and pus; these changes are due to inflammation. The lumen of these altered ducts, as well as those in the normal tonsils, are almost in direct continuation of the lymphatic system, as also with the venous system; this is due to the thinness of their walls, especially those that have undergone pathological changes. If the orifices of these ducts, which open into the oral cavity, become occluded, it will be readily seen how they furnish a most favorable nidus for the development of bacteria and other specific poisons, the germs of which find in these ducts a protected shelter where they develop unmolested.

During the act of deglutition, especially when respiration has been carried on through the mouth, a favorable opportunity is afforded for infectious particles and specific poisons to enter the orifices of the ducts, whence they penetrate the ducts, and there become tightly lodged. That the specific virus of diphtheria, as well as the infectious material of scarlet fever, likewise gains access into the system through the same channel is undoubted; and that many other infectious diseases also get into the blood in the same manner, seems to me to be very plausible.

The almost simultaneous development of a number of cases of tonsillitis in a certain locality (endemic) is, without doubt, due to the development of the germs in the ducts of the glands, there being an especial predisposition to an attack in those in whom pathological changes, as before described, have already taken place.

My therapeutics in these cases of tonsillitis consists in applying pressure (squeezing) to the tonsils (from below upward) with a wad of cotton wrapped about as thick as the little finger around the point of a dressing forceps, and dipped in a mixture of tincturi iodi et glycerini, equal parts. The removal of the foreign matters, which have a tendency to cause inflammation, by this method at first causes some pain, but the relief obtained from it is so great that you will find your patients asking to have it repeated in a few hours. The use of a gargle of potassium chlorate, and the administration, at night, of a moderately large dose of quinine materially assist in the cure.

After the patient has recovered from the attack of tonsillitis, we begin our measures for the prevention of the return of any more attacks of tonsillitis, for the patient is bound to have relapses—and you will meet with many patients who have suffered repeatedly from attacks of angina tonsillaris.

For the purpose of putting the tonsils in a condition to resist attacks of angina the ordinary blunt hook will be almost the only instrument required. If you simply inspect the tonsils by using only a tongue depressor, you will not be able to give a positive opinion of the condition of the glands—if they are filled with pus, or if they have become impregnated with substances which are more or less deleterious to the blood; to give a positive opinion you must make use of some hooked instrument (tenaculum). When the blunt hook is made use of in closer examinations of the tonsils and is allowed to glide over the tonsils from above downward it will be found to enter depressions in the gland caused by previous attacks of tonsillitis. From these depressions there will often well up, unexpectedly, a fluid, yellow pus, or the normal secretion of the tonsils which has become converted into thick, hard, caseous particles, and which is often possessed of such a penetrating odor that the fetor which issues from the mouth nauseates the patient and those with whom he comes in contact. In these cases it is best to allow the tenaculum to sink to the base of the depressions and then to perforate the mucous membrane, allowing the opening to appear on the oral mucous membrane and then with a quick motion tear through the intervening membrane; by this means the previously existing cavity or recess becomes converted into a slit or cleft, which, during every act of swallowing, opens, and thereby empties itself, so that no inflammatory products can attach themselves.

The principle of the practice of this trifling operation for the prophylaxis of tonsillitis, is based on the view that there shall not exist, either in the tonsils or posterior thereto, any opening which has not been thoroughly explored to its base and then laid open and converted into a cleft through which the blunt hook must pass smoothly without becoming caught in any pocket.

In some few serious cases, or in some of long standing, it may be found necessary, in addition to the above procedure, to remove a part, or the entire tonsil. In other cases it will be necessary to remove only a piece of the mucous membrane. This latter must be done in those cases in which, in the act of swallowing, the mucous membrane will act as a lid to the fissure or slit, and thereby prevent it from emptying "itself of its contents. It is, however, advisable to endeavor to preserve as much of the tonsil as possible, as it is my belief that the fermenting properties of the tonsillar secretion are at least a great help if not an important agent in the process of digestion.

For the purpose of removal there will be required a long hooked forceps, or a dressing forceps, a tonsil bistoury, and a pair of curved scissors for the purpose of cutting down to the base of any pus passage, the base of which is not permeable owing to the presence of a tough scar tissue which may be so dense that it will be found impossible to lacerate it

with the blunt hook, and which must therefore be cut open with the scissors. It is, however, much better to tear through than to cut with the scissors (although this may be accomplished, as I have shown, by using a blunt hook, which has its inner edges sharpened), because the wound produced by the scissors will heal up in an undesirable manner. The little operation is finished by applying to the wound—from which there is but little bleeding—a pledget of cotton dipped in a mixture of iodine and glycerine, after which the patient must abstain from the use of warm victuals and drinks, as they may cause pain. A lukewarm gargle, composed of a weak solution of common salt, or one composed of a weak solution of potass. chlorate should be used; during the summer (if the operation is performed during this time) small pieces of ice may be taken into the mouth; often, however, nothing at all is requisite, because the following day the patients seldom experience any discomfort.

It happens but seldom and then only in patients of a nervous disposition, that both tonsils cannot be operated upon at one sitting, and these cases seldom require more than two or three sittings. This operation is soon followed by the disappearance of the chronic redness of the gums, a symptom which is always coexisting and a positive proof of the presence of pus accumulations in the tonsils, and any chronic pharyngitis that may have been present will also be found to have greatly improved or entirely disappeared without the use of any medicaments whatsoever.

It is very desirable and favorable to a rapid radical cure that the patient should frequently have the tonsils swabbed with iod. glycerin., so that a healthy mucous membrane results, and one that does not easily bleed and which shall act as a resisting barrier between the blood and lymph systems and the outer world.

There still remains to be discussed the question, whether the prevention of inflammation could not be as readily if not better accomplished by the use of the galvano-cautery, scarification with a knife, or by performing tonsillotomy! The first two of these procedures are without doubt beneficial, because the cavities in the tonsils are thereby laid bare and cauterized. But if this result is achieved, it is more due to "blind luck" than anything else, and still more depending upon chance is the formation of a scar, for after the use of the galvano-cautery it is not always that cicatrization readily occurs owing to the continual contraction; and even if the scar is well formed it is often the cause of the development of new recesses and pus-filled cavities, which, on account of the scar tissue, it will be found very difficult to lay bare.

My argument against the removál of the tonsils with the tonsillotome is, that by this method there is removed more of the secreting mucous membrane of the gland than there is with the galvano-cautery, and also the circumstance, that after the removal of the tonsil it is still necessary to look for and to open the cavities which are sure to remain after the performance of tonsillotomy, and this becomes so much more difficult on account of the dense scar that remains after the use of the tonsillotome. The partial excision for the purpose of laying bare a deep cavity which may exist behind the gland is often imperatively demanded, but may be more easily reached by the use of the blunt hook.

It is advisable (especially in those patients who want to feel assured that they are thoroughly protected against angina tonsillaris) to have them come to your office about six months after the operation for the purpose of inspection, and it is well to recommend them to call again after the lapse of another six months—preferably during spring or fall—in order to be absolutely certain.

It is in the laying open of the normal ducts of the tonsils in young children who have never had an attack of angina, herpetic or diphtheritic affection of the glands, but who are predisposed thereto on account of the congenitally thick spongy condition of the tonsils, as also by reason of the history of tonsillar inflammation in their families, that we achieve the happiest results. In these cases in children, the ducts may be very readily laid bare, as they do not penetrate very deeply into the gland; the operation may be made absolutely painless by first applying cocaine. The thickened tonsils rapidly shrink, and their immunity against inflammations seems, according to my observations, up to the present time, to be thoroughly established. It is my belief that children thus treated have also less to fear from an attack of diphtheria, than those who receive the most devoted care and attention during such an attack; just as in traumatic diphtheria, here it is surely easier to prevent an attack of it by the use of antiseptic treatment, than it is to cure a case.

I was led to make this investigation by finding in my endeavors to learn the origin of diminution in the power of accommodation, that it was so constantly associated with tonsillitis, and that on the latter being removed the accommodation also improved.

SURGICAL CONSIDERATIONS OF THE ABDOMINAL COMPLICATIONS OF TYPHOID FEVER.

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DURING a recent surgical survey of Europe I took pains to interrogate those whom I met upon various subjects which have had more than ordinary interest for me. Perhaps most interesting has been the topic of which I now propose to speak, namely, the question of surgical interference in the abdominal complications of typhoid fever.

My inquiries met with but one affirmative response—that was in Birmingham. There Mr. T. H. Bartleet during the past winter had operated for perforating typhoid ulcer. Perforation was diagnosed by the resident physician, at whose urgent request the attending physician gave sanction for surgical interference, and Mr. Bartleet was called in. He made a median incision, and great fecal extravasation was discovered upon opening the peritoneal cavity. An unsuccessful hurried search was made for the bowel

opening, the cavity irrigated, a drain put in, and the parietal incision closed. The patient died during the second day after operation.

Since my return a single contribution upon this subject has appeared in literature: the report of a case operated upon in 1885, by Prof. Kussmaul, of Strasburg, and reported by Lücke in the *Deutsche Zeitschr. für Chirurg.*, 1886–87, xxv. 1–4. I give an abstract of the important points of this, to be, historic case:

A woman, aged twenty-eight years, was admitted to the Strasburg Obstetrical Clinic, on September 22, 1885, and very shortly afterward confined normally. The puerperium was tardy, and she gradually developed a typhoid condition. This became so marked on October 14th as to justify a positive diagnosis of typhoid fever. All went well until the night of the 22d of October, when she was suddenly taken with agonizing pain in the abdomen, and symptoms of collapse. In ten minutes she was seized with continuous chills, was cold, pale, and bathed with cold prespiration; pulse 180, and small; much vomiting, pain upon palpation of abdomen, and tenesmus present. The patient was a few hours later transferred to the surgical clinic with the accompanying diagnosis of perforated typhoid ulcer.

Prof. Kussmaul saw the case almost immediately, and determined upon abdominal section. Upon commencing operation the patient's condition showed: cold extremities, pulse small and weak, belly moderately distended and painful, great shock. Precautions were: warm room, legs carefully wrapped, rigid antisepsis. An incision was then carried from the umbilicus to the symphysis pubis. The incised tissues were found œdematous, and upon opening the peritoneum much dark, flaky, feculent fluid escaped. The intestines were pasted together and covered with fibrinous exudate. The coils of the small intestine were carefully drawn out, examined, and covered with hot moist towels: they were found quite adherent to one another. One small perforation was found about a foot and a half above the ileo-cæcal valve. From it flowed yellow feculent material. The cæcum and vermiform appendix were negative; mesenteric glands enlarged. That portion of the gut including the perforation was excised and stitched with Lembert sutures, the peritoneal cavity cleansed thoroughly by irrigation with salicylic solution and sponging, a large drain placed in position, and the abdominal wound closed. The patient died in eleven hours without reacting from shock.

Necropsy proved the presence of broncho-pneumonia and hypostatic congestions, foul pus in Douglas's cul-de-sac, and fibrinous exudate everywhere in the peritoneum, while the drain tube was totally obstructed by a kink. The belly-wound was in excellent condition. The site of resection was found to be nineteen inches above the ileo-cæcal valve, while on either side of the intestinal incision circular necrosis and inflammation were well advanced.

As far as my knowledge and search go, these two cases represent the history of surgical interference with the peritoneal complications of typhoid fever. In the *Philadelphia Medical Times* of December 11, 1886, Dr. James C. Wilson, after recounting a case of recovery from peritonitis following supposed typhoid perforation, impressively asks whether operation in certain of these cases would not be justifiable, and pleads for its judgment by trial. This article called forth an approving editorial in THE MEDICAL NEWS, but since then the subject has remained dormant and received no further public attention. Whether the future will present more brilliant and encouraging results remains to be seen, certainly they can become no worse in record, and just as certainly there would seem to be chance of improvement.

The etiology of the conditions which might indicate operation appears well understood, and we have no additional modern knowledge which will, by making more clear the exact etiological factors, possibly also assist in diagnosis. For upon the latter depends *everything* concerning surgical interruption of the typhoid pathological process.

There are practically but two conditions which we could have any hope of benefiting by operation. They are, perforation of the intestine with intra-peritoneal extravasation; and rupture of a suppurating gland or other abscess into the abdominal cavity.

Now, granted that either of these conditions has been correctly diagnosed, and the patient not moribund, I should consider it imperative duty to interfere surgically. In the light of present medical science I think everyone will agree with me that the condition *diagnosis* being allowed, we should so proceed until it is proved either that operation can be of no avail, or that an occasional life, otherwise condemned, can be saved.

Diagnosis being our starting-point and foundation, what then may be our powers in that direction? First, however, a word as to the etiological factors which give rise to the conditions which we would improve. Typhoid perforations and mesenteric gland abscess occur more frequently in men than in women—almost never in children. About 1 per cent. of cases in adults perforate, and 10 per cent. of typhoid fever deaths occur from this complication. From the beginning of the third week until the end of the fifth week is the period when such complications are most apt to take place. Either of the chief complications of which we are speaking, but especially perforation, may arise at even a very long period after the subsidence of apparent symptoms, perhaps from a resultant chronic ulcer, but this latter would scarce come under the strict limits of our caption. Perforation may be the result of primary slough of a Peyer's patch early in the course of disease, but usually, and at a later stage, secondary ulceration is responsible. Completely formed ulcers have been observed as early as the seventh day. The mesenteric glands are always enlarged, frequently inflamed, and occasionally slough during the course of typhoid fever. This is the result of conveyance to them of absorbed septic matter by the intestinal lymphatics. The exact nature of this irritating substance we do not understand, nor does its constitution concern the limited scope of this article.

Suppurative peritonitis may, in the typhoid state, develop from one or more of three causes: from irritation of the peritoneum by proximatous inflammation of gland, intestine, or other organ; from the perforation of an ulcer, or from rupture of a gland or other abscess into the peritoneal cavity. The earliest sloughing and ulceration, as a rule, will be found close to the ileo-cæcal valve, and in this same region are to be found the most violent septic changes and extensive ulcerations, although, on the

other hand, it is not a fact that most perforations there occur; which may depend upon the peculiar bowel structure in that region.

Hoffmann states that the ulcerative process rarely extends more than nine and a half feet above the valve; it *can* occur, however, in any place where intestinal glands are to be found, from the upper duodenum to the lower colon, but ulceration at these extremes must be very infrequent. Perforation of the vermiform appendix from involvement of its follicles is to be remembered as a possibility, but I have no knowledge of an example.

The immediate causes of perforation are: imprudence in diet, muscular exertion, and, occasionally, the movements of entozoæ.

Liebermeister states that an apparent diphtheria of the mucous membranes—including the intestinal—occasionally follows upon recovery from typhoid fever, but regards the process more as a breaking down from malnutrition than as a true diphtheria. Perforation of intestine from violent inflammation has been known to follow this condition of its mucous membrane.

Rupture of the spleen occurs rarely, as does peritonitis also, from proximity to, or rupture of, abscesses of the same, or other abdominal organs. Gangrene of more or less intestinal wall is also an infrequent complication. Peritonitis may arise at any time from the onset of an attack of typhoid fever until an indefinite period after the establishment of convalescence. Originating before the end of the first week it cannot be caused by perforation or abscess, unless the former be due to the breaking down of an old ulcer cicatrix, etc., caused by the general devitalization of tissues. In fact, before the end of the second week, any peritonitis starting up is probably of the irritative or sympathetic type, or due to the general constitutional depreciation incident to the disease. This form is liable to come on at any time during the course of the malady in question, and must be dealt with as we would with a similar state of affairs in a non-typhoid individual; with the difference that some of the special considerations hereafter to be mentioned must be kept in mind before operative interference is undertaken. Of course, surgical treatment would always at least be considered in any case of peritonitis in these times. Sudden onset of peritonitis of violent type or with concomitant or quickly succeeding great shock or collapse, during the time limits when perforation, etc., are likely to occur, would indicate with great probability that some such accident had taken place: gradual onset and increase might be caused by either the more grave complications, or by irritative or sympathetic lesion—most probably the latter. Cases are on record where perforation has taken place, a very small amount of bowel contents escaped, the pathological orifice had been almost at once closed by fibrinous exudate, and *gradually* increasing fatal purulent peritonitis set up.

Great shock or collapse without concurrent peritonitic symptoms may indicate hemorrhage, or even the most desperate septic peritonitis from perforation. One case under my care not long since became greatly shocked, complained of a little more pain in his ileo-cæcal region than he had been having, had copious bloody stools, and died in about twelve hours. Post-mortem showed that perforation had taken place at a higher level of intestine, coincidently with hemorrhage from a separating slough lower down, and that purulent peritonitis had already started and made considerable headway. No symptoms of the latter complication were discernible during life, and I hope that the combination is, and will continue, unique; and that we shall soon possess some means by which accurately to differentiate the occasional shock of beginning peritonitis from hemorrhage. Investigations into the by no means trite subject of the symptoms of certain forms of peritonitis are most urgently needed. Within a year I saw a man die of universal purulent peritonitis from traumatic rupture of intestine, without presenting a single conventional symptom of that "inflammation."

May means be forthcoming to tell positively the presence or absence of peritonitis under all circumstances? Those who have had most experience will, I think, agree with me in being in a very anxious receptive condition for the advent of such pathognomonic signs. Upon the occurrence of perforation, patients usually become conscious, if they have not been so before; but, unfortunately, this sign holds good for hemorrhage also.

Sudden agonizing pain in the right lower abdomen, quickly increasing and extending, chill or coldness, particularly of the extremities, fall of temperature, small, rapid pulse, hurried, shallow breathing, haggard appearance, and perhaps tympany and diminished liver dulness—these symptoms strongly indicate perforation; none is positive, but the combination, in absence of hemorrhage, is *almost* so. According to Hoffmann, violent general peritonitis without perforation took place in 16 instances out of 2000 cases of typhoid fever. Liebermeister has twice observed the same conditions arise, in similar cases, from rupture of the gall-bladder, and the discharge of calculi and bile into the peritoneum. The same author also mentions cases dying of perforative peritonitis which, during life, presented no symptoms of it. Infarctions of the liver, spleen, and ovary are said, likewise, to have originated these same conditions, with and without symptoms. Rupture of the spleen, and consequent death from hemorrhage or subsequent peritonitis, has been reported more than once. A very small perforation may cause gradual onset, or limited peritonitis. Reported cases of recovery from general peritonitis, due to typhoid perforation, are most probably ones of mistaken diagnosis. Flint says that peritonitis from perforation is almost certainly fatal.

Let me quote Dr. Wilson's impressive remarks. "Granted that the chances of a successful issue are greatly against you; that the patient is in the midst or at the end of a long sickness; that his tissues are in the worst state to stand the injuries of the surgeon's knife; that the lesions of the gut may be very extensive; that the vital forces are at the lowest ebb. No one yet has hesitated to perform tracheotomy in the laryngeal complications of enteric fever, which require it to save life for these reasons. The opera-

tive treatment of purulent peritonitis has been performed many times successfully by gynecologists in conditions scarcely less unpromising. In point of fact, the objections which may be urged against laparotomy in intestinal perforation in enteric fever are no more forcible than those which would have been made use of at first against the same operation in gunshot-wounds of the abdomen. . . . The courage to perform it will come of the knowledge that the only alternative is the patient's death. Certainly *à priori* reasoning will not help us. We must not, however, overlook the fact that while a few cases of perforation occur in the second week of the disease, while the infective process has yet some time to run, a far larger proportion take place in the period of convalescence when the condition of the patient, except for deep ulceration, often single, is tending toward recovery."

If satisfied then that in certain of these cases operation is positively indicated and demanded, we should think over what course of procedure to adopt in carrying out the operation, that we may be prepared to deal with them when called upon to do so. All usual precautions taken in abdominal sections should be observed. The surroundings and atmosphere should be as cleanly as possible. The patient must be stimulated, if necessary, and extraordinary pains taken to keep him warm, such as surrounding him with hot bottles, wrapping the limbs with warm blankets, using hot solutions, and having the temperature and moisture of the apartment at just as high a point as the surgeon and his assistants can withstand—a collapsed patient can bear with benefit considerably more moist heat than can the operator.

If there is time and opportunity, a hot bath will not only cleanse the patient, but also improve his condition if he is shocked. Every unnecessary movement or manipulation of his body should be strenuously avoided before, during, and after the operation. The abdominal walls, and everything liable to come in contact with the wound, must be surgically clean, and in convenient order before the operation is begun. Median incision will undoubtedly prove best in almost every case. It should be as long as is necessary for efficient work, and commence a little more above the pubes than is usual in such incisions. Extreme gentleness will be required throughout, as otherwise, perhaps in any case, other ulcers may be broken through. Let systematic search for lesions commence at once upon gaining admission to the peritoneal cavity, starting, in order, at the points most liable to involvement. We should examine the cæcum and its appendage, then carefully go over the entire length of the small intestine continuously from its termination in the cæcum to its origin at the pylorus, by passing it between the fingers. This finished, in like manner the colon should be examined; then the mesentery, ovaries, liver, etc.

What shall be done with lesions when found? This is a vital, and not an altogether answerable question.

Perforations, in the great majority of cases, will be found in the small intestine corresponding to the position of Peyer's patches. Occasionally a follicle ulcer will perforate near the mesenteric border, but probably never so close to it as to produce the trying injuries which are made by a bullet or knife. In the cæcum, or colon, perforation is equally liable to occur anywhere, except close to the meso-colon attachments. The usual position of these lesions is fortuitous, as the situation permits of most easy reparative treatment.

Shall we resect a perforated bowel, simply turn in the borders of the perforation, or attempt the production of an artificial anus?

In the lack of experience, nothing positive can yet be said upon this point. We do know that circular gangrene of intestine occurred in the single instance where exsection has been done, but this may possibly have been due to some defect of operation. A large perforation, or a small opening through the base of a very large, deeply excavated ulcer, would probably require excision of a portion of bowel. Such an ulcer occurring in the small intestine would be in its longitudinal diameter, hence, it can be turned into the bowel entire by Lembert sutures introduced beyond its lateral borders. This I should be inclined to think the best method of dealing with most perforations, or ulcers about to perforate. The possibility of narrowing the bowel immoderately must be kept in constant view, and where the above suggested mode of repair would undoubtedly give rise to it, resection or artificial anus must be substituted.

It is possible that the necrosis of bowel already alluded to resulted from the absence of resistance in tissues so profoundly poisoned and malnourished as, of necessity, are those of a typhoid individual. We do not even know what course the parietal incision itself would follow, but I deem it probable that, with thorough cleanliness, such wounds could be induced to heal kindly. At the worst, happen what may, the patient can be in no more deplorable condition than before operative interference was carried out. We know nothing of what possibilities there may be in this direction, and I would plead for an attempt to reduce a mortality of one hundred per cent. If resection cannot successfully be done, and the affected area is too large for efficient stitching, then artificial anus would be another resource.

Whether any one of these three methods of treatment is *the* one, or whether all will have occasional use, must be determined by trial and experience. The order in which I should suppose them valuable would be: stitching by Lembert's method, resection, and, lastly, artificial anus.

In the examination of the intestine I should also be inclined to turn into the bowel lumen, by the same method of stitching, any seats of disease which appeared likely soon to perforate, or to approach dangerously that condition. Cæcum and colon lesions could, probably in every case, be treated by simple stitching. The principles of modern abdominal and general surgery must be our guide in treating the rare abscesses of mesentery, liver, spleen, and ovaries which complicate typhoid fever. The point which I wish to reiterate is that, these having ruptured into the peritoneum, and being so diagnosed, it is our imperative duty to open the abdomen and treat what

we may find according to our knowledge, unless the future shall demonstrate that no good can ever be accomplished by surgical interference in these desperate and, at least heretofore, necessarily fatal cases.

Large irrigations with very hot distilled or medicated water are indispensable before closing the abdomen. Just as important will it be to drain these cases thoroughly, and for this purpose nothing answers so well as the leaving in of a Keith glass-drain. This tube can best be kept in working order, as suggested by Dr. Joseph Price, by carrying a rope of absorbent cotton (medicated, if preferred) to its bottom, and removing it as often as a wad of cotton placed over the outlet becomes saturated. The rope and superimposed cotton must be renewed as it becomes saturated, even as frequently perhaps as every couple of hours for the first day; afterward, at less frequent intervals, according to circumstances.

The oncoming of symptoms of a second perforation would call for a repetition of the whole process.

CÆSAREAN OPERATION,

FOR THE RELIEF OF AN OBSTRUCTION, CAUSED BY A UTERINE FIBROMA IMPACTED IN THE PELVIS.

BY THOMAS M. DRYSDALE, A.M., M.D.,
OF PHILADELPHIA.

THE attention of the profession has repeatedly been called by Dr. Robert P. Harris to the unsatisfactory results of the Cæsarean section in the United States, caused mainly, as he has clearly proved, by the delay in operating, and very recently an able article by him on this subject was published in THE MEDICAL NEWS.

This stirring appeal to improve the results of the operation in our country must meet with a hearty response, and a God-speed in the good work from every obstetrician and surgeon. In the article referred to, Dr. Harris appears to lay the blame for this delay mainly upon the medical attendants' ignorance of pelvimetry. "If our obstetricians," says he, "had as good a knowledge of pelvimetry as prevails in the maternities of Austria, France, Germany, and Italy, there would be much less delay, and fewer attempts to deliver, either by forceps or craniotomy, in cases of pelvic deformity or other forms of obstruction."

This is undoubtedly true in many instances, yet the delay is not always owing to the want of such skill, for, even when the diameters of the pelvis are known to be normal, cases occur in which eminent practitioners are in such doubt that every resource of the art is appealed to before the Cæsarean section is decided upon. Witness the case reported by Dr. Parish, at the meeting of the American Gynecological Society, in 1886, or the one published by Prof. T. Gaillard Thomas, in the *American Journal of Obstetrics* for February, 1876, p. 612. In both of these pelvimetry was not at fault, nor was skill absent, yet delivery by section was not determined upon until all other hopeful means were fruitlessly used. It is clear then that the obstetrician is not invariably to blame in such cases, for an honest difference of opinion may unhappily lead to such delay that a disastrous result is inevitable. And while in the main Dr. Harris is correct in the statement which I have quoted, yet instances will occasionally present themselves where we are foiled in our desire for an early, and therefore successful, operation by the misleading character or the obscurity of the symptoms, resulting in an erroneous diagnosis, or causing such doubts that an operation is only undertaken under protest from some of the attendants, as in the following case.

I was sent for, November 5, 1884, by Dr. Emil Fischer, to "aid him in a case of abnormal labor," and received this history. Mrs. I. P. R., a native of Germany, a small, delicate looking blonde, thirty-five years old, said she first menstruated at the age of twelve, without pain or trouble of any kind, and had always been regular both as to time and quantity until she became pregnant. The only exceptions to this were that five or six years previous she had a profuse flow, accompanied with clots, which lasted eight or nine days; and for some months before marriage she had noticed that the discharge was growing scanty.

She was married January 16, 1884, and thought she became pregnant at once, as she last menstruated from the 10th to the 14th of the month. The abdomen enlarged regularly, and the motions of the child were strong from the time of quickening until a week before the pains commenced; since then the motions had been weaker, but were still felt. For the first seven months she had constant nausea and frequent vomiting, for the relief of which she had early applied to Dr. Fischer, and at the same time engaged him to attend her in her confinement, which she expected to occur in October. Ten days before my visit the uterine tumor fell lower in the abdomen, and her waist became smaller. The functions of the bowels and bladder were normal.

During the night of November 4th she was seized with strong bearing-down pains, coming at regular intervals, and accompanied with gushes of blood from the vagina, but without any escape of liquor amnii. In the absence of Dr. Fischer, Dr. Bricker was sent for, who, to arrest the bleeding, gave her fluid extract of ergot and used a tampon. Dr. Fischer saw her about 10 P.M.

With the exception of the prolonged period of gestation, which Dr. Fischer thought could be readily accounted for by an error of calculation, nothing had occurred up to this time to indicate anything abnormal in the pregnancy. Now, however, the doctor discovered, on examination, a body which appeared to be the child's head, occupying Douglas's pouch, and diagnosed extrauterine fœtation. As the hemorrhage continued at his visit, and the first tampon had escaped, he inserted another.

I saw her at 12, noon. The pain and hemorrhage had ceased about 11 o'clock the night before; she had taken nourishment and appeared comfortable and cheerful. Her pulse was 112; temperature 98½°. On examination I found that a hard mass occupied Douglas's pouch, and, in fact, the whole true pelvis. The finger came in contact with it about an inch within the vagina. It was globular

and resembled in shape and feeling a child's head, covered with a thin layer of uterine tissue. It filled the pelvis so completely that there was only room for a finger to pass between it and the pubic bone. A careful search failed to detect the cervix or os uteri. A uterine sound was passed along the vagina and entered until the handle was buried within the labia, before it met with resistance. Its point could be felt through the abdominal wall, as if just under the skin below the umbilicus. The breasts were small and soft, and although the areolæ were dark, no enlarged follicles were seen. No milk could be obtained from them.

The abdomen was occupied by a tumor of the size of a fully pregnant uterus. It was hard and resisting to pressure, and, in fact, felt like a uterine fibroid. This resemblance was strengthened by a number of small, hard tumors, some of them movable, which projected from the surface of the mass. It was impossible to find anything like the outlines of a fœtus within it. A prolonged examination failed to reveal the fœtal heart sounds, but while listening for them, I detected an occasional slight uterine contraction.

I diagnosed pregnancy, complicated by a fibroma of the uterus, developed in its posterior wall, which had been forced down and occupied the pelvis. Taking this view of the case, I proposed attempting to free the pelvis of the tumor, and, failing in this, to perform the Cæsarean section. The patient was placed in the genu-pectoral position, and a vigorous and prolonged attempt made to raise the mass, but without success.

After this, she remained free from pain, and did well until the night of November 8th, when there was a return of active labor, accompanied with some discharge of blood and dark clots from the vagina. Dr. Fischer gave her a half grain of morphia, which quieted the pains.

I saw her with Dr. Fischer November 9th, when she complained of feeling weak and of soreness over the lower part of the abdomen. She had lost her appetite, but her tongue was clean and moist; pulse 112; temperature 98°. Her bowels had moved freely, and she had frequent desire to pass water. Another and equally fruitless attempt was made to dislodge the tumor.

From this time until the operation, she had no return of expulsive pains. Her general condition remained the same. The upper part of the abdominal enlargement became softer, but the pelvic portion continued hard. She again asserted that the motion of the child could still be felt, but much fainter than it was a week before.

I operated, with the usual antiseptic precautions, except the spray, November 12th, at 11 A. M., in the presence of Drs. Parvin, W. S. Stewart, Robert P. Harris, Emil Fischer, C. R. Prall, C. E. Bricker, Frank Fisher, and my son. After a hypodermatic injection of ergotine, the patient was placed in the usual position for laparotomy, and an incision made from the umbilicus downward, about six inches in length. The uterine section was made rather shorter, commencing near the fundus and passing downward. The membranes, stained with meconium, bulged through the wound. On opening them, the child, which was large, was seen to lie with its back to the incision, and the vertex downward. Seizing its legs, it was readily extracted. The placenta occupied the fundus, from which it was detached. This was followed by a pretty free hemorrhage, which was quickly arrested by the uterine contractions. The inner surface of the uterus was of a dark green color to the depth of one-eighth of an inch, and presented a gangrenous appearance as if its vitality had been destroyed by its contact with the dead matter. It was disinfected as thoroughly as possible by sponging with a five per cent. solution of carbolic acid.

The pelvic tumor was now examined and found to spring from the posterior wall of the uterus. It still remained firmly fixed in the pelvis, from which, after some difficulty, it was dislodged by drawing on it from above while it was forcibly pressed upward through the vagina.

Wishing to ascertain the condition of the os, a uterine sound was passed; no opening of it had occurred and a short cervix still existed. Before closing the wound in the uterus the cervical canal was dilated and a drainage tube passed through it into the vagina.

When the uterus was emptied, arterial blood was seen to be flowing freely from the upper angle of the wound near its peritoneal coating, over the site of the placental attachment. On attempting to secure the vessels the uterine tissue proved to be so soft and friable that the ligatures cut through it, leaving a bleeding surface. As the vessels could not be ligated, they were secured by bringing the edges of the wound together by a silk suture, passed under them through the entire thickness of the uterine wall, which at once arrested the bleeding. Ten other deep sutures were introduced in the same way and the wound in the uterus closed. Ten fine sutures were then used between these to secure the peritoneal coat; these were made in such a way as to turn in and bring the peritoneal surfaces in apposition. The external wound was closed with silk sutures, a compress and bandage applied, and the patient put in bed. She soon came from under the anæsthetic, made no complaint and presented no evidence of shock. The pulse was 98 and of good character.

She did well until 5 P. M., when she complained of soreness in the lower part of the abdomen and severe after-pains, for which I ordered an injection of half a drachm of denarcotized tincture of opium, to be given every hour. Her pulse was 96, temperature 100°: 10 P. M., pulse 112; axillary temperature 100°, in vagina 102°. She was sweating so profusely that her pillow and clothes were wet. As she still suffered from the intermittent uterine pains, I ordered a quarter of a grain of sulphate of morphia in half an ounce of camphor water, to be given every half hour until she was relieved. Soon after my visit she vomited, and continued to do so until 4 A. M., when Dr. Bricker was sent for, who, finding her pain unrelieved, gave her a hypodermatic injection of half a grain of sulphate of morphia. Nov. 13, 10½ A. M., her pulse was 140 and weak; temperature 105°; breathing irregular and gasping; surface decidedly cyanosed. Ordered ten grains of

quinine and an ounce of whiskey by injection, and again washed out the uterus with carbolized water.

She continued to sink and died at 1.50 P. M. At the autopsy, made the next day, the uterus was found firmly contracted, and already the peritoneal lips of the wound in it were adherent, but the muscular wall showed no signs of healing and was thickened by fibroid degeneration. Its cavity contained some dark blood. The tumor was seen to originate by a broad base involving the cervix and about one-half of the posterior wall of the uterus. Its surface was mottled, but presented no signs of inflammation. The entire peritoneum was healthy, except on the anterior portion of the uterus, which was adherent to the abdominal wall for the space of an inch on each side of the incision in this organ. Douglas's pouch contained about two ounces of bloody serum.

Her death was undoubtedly owing to septicæmia, as there was no evidence of peritonitis beyond that already described. The septic poisoning probably occurred by the uterine contraction forcing the dead matter from the interior of the uterus between the edges of the wound where it could be readily absorbed by the freshly cut surface, or even enter the uterine sinuses.

This case is chiefly remarkable for the difficulties it presented in arriving at a correct diagnosis, which can be best appreciated by a brief review of its main features. After marriage, the patient, who had menstruated regularly, ceased to do so: morning sickness occurred and proved obstinate; the abdomen enlarged regularly; the fœtal movements were asserted to be active, and at the end of the tenth month she was seized with the usual signs of labor.

The history and symptoms, so far, then, were clearly those of pregnancy, although the duration was unusual, but this Dr. Fischer thought might be owing to an error of calculation. As nothing unusual in the condition of the patient had presented itself, the doctor had made no examination until the pains commenced and the patient supposed herself to be in labor. Then the pelvis was found to be occupied by a mass in Douglas's pouch, which he believed to be the head of the child, and so diagnosed extrauterine pregnancy and sent for me. Up to this time no doubt had been felt as to the fact of pregnancy, but further examination showed the breasts undeveloped and the areolæ unchanged, and *although the mother asserted that the fœtal movements could still be felt* none could be detected, while prolonged auscultation failed to reveal the sound of the fœtal heart. The abdomen was occupied by a solid tumor of the usual size of a pregnant uterus at full term, but conveying to the touch the sensation of a solid body like a uterine fibroid, in whose surface could be perceived imbedded several small movable tumors, but nothing resembling any part of a child could be detected. The mass in the pelvis so thoroughly filled it that only a finger could be passed with difficulty between it and the pubic bone. The finger thus inserted could detect no portion of the uterus or child within reach, while a uterine sound measuring eleven and a half inches was introduced until its handle was buried within the vulva, when its end could be felt as if just under the skin below the umbilicus. It will be seen, then, that the child was in a thoroughly inaccessible position. It could not be reached from below, neither could its form be made out through the uterine walls above, owing to the broad, smooth back of the child and the placenta being closely applied to them. There was, therefore, no opportunity of verifying the diagnosis by the usual methods.

The pelvic tumor was hard, and closely resembled the head of a child, the deep sulci in it simulating the sutures. So deceptive was it to the touch that two obstetricians of large experience believed it to be a child's head in a retroverted, pregnant uterus. To add to the obscurity of the case, the pains which occurred the night of November 5th left her until the 8th, when they yielded readily to morphia, and never returned.

There were no constitutional symptoms present, except a rapid pulse, for which the loss of blood would account. Apart then from the history of the case, which was not entirely reliable, and the absence of menstruation, there was absolutely nothing to distinguish it from a rapidly growing, uterine myoma, except the intermittent uterine contractions. It is evident that such a condition of things is rarely met with, as I can find no similar case on record. This one, therefore, differs in that respect from any others reported, for in them a correct diagnosis could be made at once, as the uterus was within reach, and, in most of the cases, the presenting part of the child could be felt.

MEDICAL PROGRESS.

Laryngeal Phthisis and its Connection with the Tubercle Bacillus.—Korkünoff reports his results from his study of this subject as follows: His material consisted of fourteen larynxes taken from cases of pulmonary, peritoneal, and general miliary tuberculosis. In twelve of these laryngeal phthisis was also present, while the remaining two did not present any structural changes either to the naked eye or microscopically. The specimens were hardened in alcohol, and then placed in paraffin, the slides being treated after the Koch-Ehrlich plan. Dr. Korkünoff's results may be summed up as follows: 1. In the twelve phthisical specimens tubercle bacilli were found in the tissues. They were absent in the tissues of the remaining two, in which there was no laryngeal disease, though the secretion collected in the ventricles contained numerous Koch's rods. 2. The number of the latter varied, but bore no relation whatever to the extent and intensity of the morbid process—that is to say, they were often very scanty in number in an extensive tuberculous mass, and *vice versâ*. Further, in some cases he was unable to detect any bacilli within or around an ulcerated region, while he found them in some recent tubercular formations in the same larynx. This shows the importance of examining in each case as many sections as possible taken from different situations. 3. So far as histological changes are concerned, the tuberculous ulcer of the larynx originates in the following way. Mostly in the subepithelial layer, but not infrequently in some deeper

one, one or more tubercles, each of which is often enclosed in a connective tissue capsule, make their appearance, the epithelial covering and intermediate layer remaining yet intact. The tubercles contain Koch's bacilli, which are also seen in the surrounding infiltrated tissue, but never in the epithelium or the still healthy intermediate layer. The latter, with the gradual increase of tubercular infiltration, becomes ever narrower, and ultimately disappears, so that the new growth comes into close contact with the epithelium. At this stage copious infiltration of the epithelial covering with leucocytes invariably takes place, and spaces become apparent between its cells, which are filled with white blood-corpuscles and tubercle rods. These spaces are nothing else than lymph spaces, which are also present in normal epithelium, but which may become dilated under morbid conditions. The nutrition of the epithelial covering now fails, its superficial strata become fissured, the infiltration with leucocytes increases, the lymph spaces grow larger, and finally the diseased portion separates, leaving a denuded or ulcerated surface. The ulcer continues to spread in the same way, that is, by infiltration with leucocytes, formation of spaces, sloughing, etc. In the parts covered with cylindrical epithelium, which is comparatively softer, the process goes on more rapidly than in those covered with the flat variety; consequently, the tuberculous ulcers are deep in the former situation, and superficial in the latter, as Biefel had already pointed out. 4. The primary cause of the process is the tubercle bacillus. Having appeared in the subepithelial layer, the microbes, by their presence and proliferation, give rise to all the changes described above. 5. The microbes enter into the subepithelial layer not from the patient's expectoration, but from his bloodvessels or lymphatics, which carry them thither from primary tuberculous foci. No bacilli are met with in the epithelium of the intact larynx in a phthisical patient, though that epithelium is in constant contact with the expectoration containing tubercle bacilli. Again, no bacilli are found in a still intact epithelial covering, when tubercles, together with bacilli, are present in the subepithelial stratum. Microbes appear in the epithelium only in places where a tubercle with bacilli lies in immediate contact with the epithelium, and when they do so, they lie in greatest numbers in the deeper layers of the epithelium, and become more and more scanty as the surface is approached. Lastly, Koch's microbes have no power of locomotion.—*British Medical Journal*, November 5, 1887.

CONCUSSION CATARACT.—LAWFORD, of St. Thomas' Hospital, reports, in the *Ophthalmic Review* for October, 1887, a case in which the eyeball, after excision, was preserved whole, in Muller's fluid, for a month, and then opened by equatorial section and examined. As regards the posterior parts of the eye, it will suffice to say that there was some hemorrhage in the vitreous, and between the choroid and sclerotic, and in the retina at the yellow spot. The lens was very slightly displaced, to a much less degree than appeared probable before removal of the eyeball. It was, however, dislocated slightly upward, and tilted a little backward, at its upper edge. The zonula had given way at this part, and the vitreous was bulging forward between the ciliary processes and the lens margin. The rupture of the iris was in this situation also. The lens was less uniformly opaque when seen from behind than it appeared to be anteriorly. Its circumference was rendered irregular by a slight prominence at the upper edge. Its posterior surface showed some unevenness, the middle part being raised a little above the lateral parts, and nearly in the centre of the posterior capsule was a small vertical gap, with a protrusion of semi-opaque lens substance through it. There was no other breach in the capsule. The whole lens was imbedded in celloidin, and sections were made transversely so as to cut across the rupture in the capsule. On microscopic examination of the sections, the rent in the posterior capsule was very well seen; it was a little to one side of the midline of the posterior surface of the lens, and the capsule on one side (probably the temporal) of the gap was curled outward upon itself, with two nearly complete turns, in an exactly similar way to that which occurs when the anterior capsule of a fresh lens is opened. At the opposite edge of the rent no such curling had occurred. The capsule elsewhere was intact. The changes in the lens substance were most noticeable in the posterior cortical layers. Here the fibres had undergone considerable change, and there were numerous globular particles among them. In the part immediately adjoining the rupture nothing but irregularly globular (or nearly globular) masses, quite structureless in appearance, could be made out, the small notch in the lens being almost filled by them. Anteriorly, there were numerous small bubbles or vacuoles among the lens fibres, which were evidently loosened and separated to a moderate extent. The nuclear part of the lens presented an almost homogeneous appearance, the outline of the fibres being completely lost. The anterior subcapsular epithelium was unaltered.

DIPHTHERITIC CONJUNCTIVITIS.—COUTANCES, of Paris, writes as follows in a recent thesis on this subject:

Diphtheria may manifest itself locally on the conjunctiva just as on other mucous membranes. Diphtheritic ophthalmia may be met with at all ages; every cause leading to debility, and especially hereditary syphilis, predisposes to it. Cold may be regarded as an adjuvant cause, but the ocular affection declares itself especially when the conjunctiva is previously unhealthy, the pathogenic microbe having an action only upon an injured mucous membrane. Diphtheritic conjunctivitis differs essentially from purulent ophthalmia by its general symptoms and also from conjunctival croup. The malignancy of the affection varies much according as the ocular affection is an isolated case, or occurs epidemically.—*Journal of Laryngology*, November, 1887.

PARASITIC INFECTION FROM DOGS.—DR. OLLIVIER, of Paris, is quoted as follows on this subject by the *British Medical Journal* of November 5, 1887:

The number of hydatid cysts in a country is in direct proportion to the number of dogs. Facts seem to confirm this theory, for they show that there are more hydatid cysts in hill districts than in the low lands, in the country than in towns. The author cites several cases observed by him, in which the cyst was plainly traceable to previous intercouse with dogs, in patients

fond of these animals. A long period, sometimes years, may elapse before the ecchinococcus develops itself, but the cause is none the less evident. Children are always fond of dogs, and like to play with them, and these pets are affectionate and caressing, and have a bad habit of licking; in this way the animal's tongue may prove a ready means of propagation of the eggs of tænia. It is also possible that they may be inhaled, when, in very dry weather, these eggs are carried about by the wind. This would explain certain cysts in the respiratory organs. The penetration into the human organism, however, generally takes place through the digestive organs by means of salads, green vegetables, fruit, and other aliments imperfectly cleaned; or by water from ponds, reservoirs, or wells contaminated by dogs resorting there to drink. The author points out the precautions which should be taken to diminish the danger of propagation of this parasite: greater care in the choice and cleanliness in the preparation of certain articles of food; avoidance of unfiltered water, and particularly of stagnant water of any kind; and, above all, less intimacy with dogs, particularly in the case of children, who should be carefully watched. He condemns altogether house dogs of all kinds, as being a source of continual danger as regards the propagation of the eggs of *tænia echinococcus*.

NASAL TUBERCULOSIS.—CARTAZ believes that though the nasal mucosa cannot escape this condition, it is rare, if one puts on one side lupoid affections, as to which great diversity of opinion exists. Cartaz has been able to find only eighteen cases of this disease, of which one came under his own observation. Nasal tuberculosis occurs under two forms, one consisting of ulceration, the other neoplastic. Ulceration, which is usually unilateral, is situated on the septum, a little distant from the nasal meatus. The ulcer has a diameter of about half an inch, and a form more or less rounded. The base is pale reddish gray, and covered with muco-pus; caseous masses are seen embedded on certain anfractuosities of the ulcer, or fine gray granulations are seen in relief. The edges of the ulcer are sometimes projecting, sometimes forming, sometimes a light gray ring, sometimes sharply cut and toothed with small excavations. There is little pain, or interference with nasal respiration.

In the second form there is usually a tumor, and coincident coryza, interference with respiration, and the diagnosis will be uncertain unless pulmonary signs are present. Cartaz recommends galvanocaustic applications, lactic acid, and iodoform.—*Journal of Laryngology*, November, 1887.

THE QUESTION OF OPERATION FOR PERITONITIS.—At a discussion of this subject before a recent meeting of the Clinical Society of London, MR. TREVES expressed his views as follows: He said that other inflamed serous cavities, such as the pleura and the joints, are amenable to extensive surgical interference, and the same general principles of treatment are now being applied to the largest serous sac of the body. Already Truc had collected a series of ninety-seven cases of deliberate surgical interference with the peritoneum, and this numerical statement alone sufficed to show the rapidity with which this treatment had spread. As to the claim of priority of the deliberate treatment of peritonitis by washing out the sac, he could only say that he did not gather from a rather verbose correspondence with Mr. Lawson Tait that that gentleman was the first who deliberately performed the operation of abdominal section for the purpose of healing a case of supposed simple peritonitis. The operation had been done in previous cases as the consequence of a mistaken diagnosis, as in Sir Spencer Wells' historical case of tubercular peritonitis. Then, again, Mr. Luke Hancock's writings show that his conception of the treatment of peritonitis was a utopian idea. Just as the poetical outburst of Addison foretold the origin of the telephone, so in an excess of surgical exuberance Hancock had predicted this mode of treatment of the peritoneum. In Mr. Barwell's case six days had elapsed before surgical interference. As a rule, such a time would have seen the termination of the career of many cases of acute peritonitis. Moreover, in Mr. Barweel's case but a small part of the peritoneum appeared to have been diseased. The necessity of thorough washing out is made evident by the reflection that the peritoneum is so large a cavity with so many recesses in which fluid might accumulate. He hoped Mr. Barwell would amend his views as to the use of the drainage tube, for if ever there be a case for the use of the drainage tube, surely it is when the peritoneum is the seat of suppurative peritonitis. The principle that underlays the practice is perfect cleanliness. And in some cases he would wash out the stomach if the vomits had been offensive. Next, as to tubercular peritonitis. Kümmell, at the recent Congress of German Surgeons, had collected thirty cases of this disease treated by laparotomy, and others who discussed the paper added six more. Of the whole number, six cases ended fatally; twenty-five recovered of the first series of thirty, and only one died of the second series of six. In many cases the operation was done practically by accident on the mistaken diagnosis, as in Dr. L. Knagg's case of encysted peritonitis. Most of the cases occurred in others than young children, and between the ages of fifteen and twenty. It seemed that it was a matter of perfect indifference how the peritoneum was treated so long as it was opened. In young children the treatment was not encouraging. Reference was made to a case of his own in a child fourteen months old; there was so much ascites that the child was almost suffocated by the attendant dyspnœa. At the operation of section peritoneal tubercles were seen. It appeared that the treatment tended to alter the character of the inflammation, and for a time this case did well; but the fatal termination was only averted. Some improvement followed the injection of one pint of a solution of two drachms of tincture of iodine in hot water, at a temperature of 100° F., and for three weeks the child seemed better. At the necropsy general miliary tuberculosis was found. The influence of the ascitic fluid on the growth and nature of tuberculosis was discussed.—*Lancet*, November 5, 1887.

DIPHTHERIA IN A PRISON.—KIONIG, of Christiania, is quoted by the *Journal of Laryngology* for November, 1887, as reporting the following case:

A prisoner, aged twenty, who had been a year and a half in prison, was attacked with diphtheria of the fauces. After the patient had begun to recover, serious paretic

symptoms of the throat and gullet supervened, paresis of accommodation, and later on, palsies of the muscles of the neck and arms, with subsequent atrophy of the muscles and extreme emaciation. He recovered, however, at last. There was no other case of diphtheria in the prison, and the only probable explanation of the way in which the contagium had reached the patient was that the prisoner had worked in a shed where a man from outside, whose child suffered from diphtheria, had previously been.

INTERNATIONAL LEGISLATION FOR THE PREVENTION OF EPIDEMICS.—At the Vienna Congress for Hygiene Professor von Pettenkofer said that as long as the etiology of cholera was not thoroughly known, the practical conclusions at which they might arrive would not be accepted as having much weight. All measures which restricted intercourse and interfered with commerce, and quarantine of all kinds, were worthless. The proposed practical prophylactic measures, such as disinfection and isolation, could prevent the spread of cholera just as little as the omission of them would propagate it. This was proved in Bavaria, in 1836, when no measures whatever were taken to stop the spread of the epidemic, and the course of the disease was, nevertheless, milder than ever before. After once more citing the example of England, Professor Pettenkofer expressed a hope that the system of quarantine would be altogether abandoned.

Dr. Angelo di Mosso, of Turin, stated that the preventive measures which had been taken in Italy, in 1884 (cordons, quarantine, isolation) had completely failed to check the disease, whilst causing much inconvenience and suffering to the country, whereas the present epidemic, though, in accordance with the order of the Minister, Signor Crispi, no such precautions had been taken, had run a much milder course, and had already nearly died out.

Dr. Stekoulis, of Constantinople, and Professor Conradi, of Bologna, also spoke against the utility of quarantine, the former particularly condemning the blockade of the Suez Canal.

A resolution as to the proposed international legislation for the prevention of epidemics, which had been drawn up by the reporters, Drs. Sonderegger, Vallin, Murphy, and Finkelsburg, was then read. It was in the following terms: The Third Section of the Congress expresses the desire that an international convention should be arranged between the different States for their common protection against cholera, yellow fever, plague, etc., the said convention to be based on the following principles: 1. Compulsory notification of each case of the above-mentioned diseases to be made without delay. 2. In a neutral European State an office should be established which should be a centre of information to which the first cases of epidemics, and regular accounts as to their course, should be forwarded by telegraph; these accounts should then be transmitted by the office to all the States which participated in the convention. 3. The convention should lay down rules for the proper sanitation of seaports and centres of commerce, etc. 4. The States taking part in the convention should take all necessary steps to prevent the shipping of persons or goods from localities in which any of the above-specified diseases were prevalent. 5. Vessels arriving from infected places should be so arranged that the patients could be isolated on board, and the necessary disinfection performed. 6. Ships coming from infected places should be submitted to a medical examination at the port where they arrive. 7. When cases of cholera had occurred on board the ship, the patients should be disembarked and isolated, and those who were suspected should be kept under observation until the true nature of the disease was established. 8. The ship should be kept under observation until disinfection had been duly carried out and it was certain that no epidemic was to be met with on board the ship. 9. At the ports of the Suez Canal an international board of medical supervision should be established, and the officials should be appointed by the Sanitary Council of Alexandria. This proposition was, after some discussion, carried by a large majority.

A proposal brought forward by MM. Ruysch, Brouardel, and Silva, that the Austrian Government should be asked to call the Sanitary Conference of Rome once more into existence, or to summon such a Conference at Vienna or elsewhere, was also accepted.—*British Medical Journal*, November 5, 1887.

POSTURE IN SLEEP.—The *Lancet* of November 5, 1887, writes as follows on this subject:

It would seem on the first blush of the matter that the posture for—that is, to favor—sleep must be generally the same as that voluntarily or instinctively assumed during sleep; but a little consideration will make it apparent that this is not correct. It may be granted that, supposing a person to be sleeping lightly and uncomfortably, the posture will be changed half-consciously to one of comfort. It would be more correct to say that it is changed in the endeavor to avoid distress or discomfort; but even the fact that sleep is quieter in the new position, will not suffice to prove that this is a better one, because the sleep may meanwhile have become deeper. It is, on the whole, impossible to ascertain, either by experience or observation, which is the posture most conducive to sleep, and attempts to lay down rules for the guidance of bad sleepers are always arbitrary, generally empirical, and rarely of any practical value. Those who think "anæmia of the cerebrum" is the cause of sleep, and those who think that, though not the cause, a diminution in the quantity of blood in the vessels of the encephalon is a necessary concomitant of sleep, prefer, and recommend, that the head should be higher than the feet; while those who adopt the opposite view, and think passive congestion causes or promotes somnolence, would have the feet raised and the head lowered. The confounding of stupor with sleep may, and probably has, something to do with these differences of opinion. Meanwhile, a common-sense view of the subject would conclude that, as there is evidently some change in the blood-state when the brain falls asleep, the best plan must seem to be to place the body in such position that the flow of blood through the vessels of the head and neck may be especially easy and free. The way to secure this, is to allow the head to lie in a posture and on a level that cannot offer any obstacle to the free return of blood through the veins of the neck, and does not tend to make the blood flow specially in any particular direction, but leaves Nature at liberty to act as she will.

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OF MEDICAL SCIENCE.

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SATURDAY, NOVEMBER 26, 1887.

THE CONTAGION OF SCARLET FEVER.

ONE of the most important questions now before the profession is that of the nature and properties of the contagious principle of scarlet fever. In common with all the eruptive fevers, it has long been supposed that the exciting cause of this disease would be found in a microörganism; and, indeed, in its mode of onset, course, and decline, it produces in an impressive degree all the characteristics of a disease caused by the invasion of organized beings and their subsequent development.

Although numerous scattered attempts to discover the supposed germ have been made during the last few years, they have been so imperfectly and faultily carried out that they attracted little or no attention. Recently, on account of the epidemic proportions assumed by the disease in England, the subject has acquired new prominence, and, as a result, a number of investigations have been recently made, the most important of which are those of JAMIESON and EDINGTON, and KLEIN, and a study of their work is valuable in showing what must be done by future investigators to settle definitely the subject.

Dr. Klein's researches were directed mainly to a disease among cows in a certain dairy, the milk of which was supposed to have caused an epidemic of scarlet fever. His conclusions were justly criticised, and it has been shown that the cows in question did not have scarlet fever, while the real cause of the human disease seems to have been found elsewhere, as shown by THIN, in the *Brit. Med. Journ.* of August 20, 1887. Edington studied the bacteriological side of the disease in the human being, and found in a number of cases several forms of microbes. One of these, provisionally named by him *bacillus scarlatinæ*, was found in the blood in all cases examined before the third day, and in the desquamation of all after the thirtieth. The deductions from the latter statement are difficult to reconcile with our present knowledge. Edington's report has been made the subject of inquiry by a special committee of the Edinburgh Medico-Chirurgical Society, the final report of which has not yet been issued. We can, however, from the facts already in our possession, point out certain things which must be thoroughly explained before any real advance can be made.

First, in regard to scarlet fever in the lower animals, especially calves. It has long been believed that cows, horses, and some other domestic animals, under favorable circumstances, could acquire a disease identical with human scarlatina. This has been flatly contradicted by intelligent men of large experience in stock-raising, and by physicians, and this negative testimony has been strengthened by the experiments of the Edinburgh committee, which obtained negative results in two inoculation experiments with scarlatinous blood, and one attempt at feeding the desquamated scales in calves. If this be so, and applies to all available animals, the difficulty of proving any specific cause in man will be greatly increased.

In regard to Edington's bacillus, it is evident that his observations were too few in number to permit of generalization even if his investigation had more intrinsic merit, for its precise nature is not yet known, and it has been asserted to be nothing more than a non-pathogenic organism. To make out the causal connection, the organism must be found in all of a large number of cases, by different observers in different localities. It must be shown to be present in the blood, or tissues, or both, of the affected persons in one or all stages. It must not be a commonly occurring parasite or saprophyte which has gained access to the body in an early stage. According to the strict rules laid down by Koch, the organism would have to be cultivated pure, and the pure cultures possess the power of reproducing the disease in men or animals susceptible to it.

These are the lines that must be followed to discover the cause. Whether Edington's investigations and those of the Committee will achieve this, the near future will tell. With the earnest work the subject is now receiving, it is fair to hope the desired information will not be long delayed.

The question of contagion associates itself narrowly with attempts made to discover the cause of the disease by examinations of the desquamation. Any results based on these must be received with great caution. Before any scientific work can be done in that direction, an immense amount of research must be accomplished with the organisms of the healthy skin. As

a result of his investigations, Jamieson recommends the use of baths and antiseptic ointments to prevent contagion. In the absence of any more positive knowledge of the nature of the contagion and the duration of its activity, these precautions may well be followed, and all the more since they were indicated by experience and observation in days when the contagion was supposed to be of a much more impalpable nature than at present. Jamieson advises the use of an ointment of carbolic acid in the proportion of one to thirty-two, as the result of culture experiments with the bacillus scarlatinæ, and continues its use until the thirtieth day of the disease, a period which might be lengthened with advantage to patient and all others exposed.

PTOMAINES AND SUPPURATION.

SOME observations of GRAWITZ, in the October number of Virchow's *Archiv*, if confirmed, will add a great deal to our knowledge of suppuration. From some earlier experiments Grawitz was led to believe that in subcutaneous inflammations in which bacteria were actively concerned, suppuration was caused, not by the bacteria directly, but by chemical products — ptomaines — resulting from the metabolic activity of the bacteria. According to him, therefore, the rule would hold good that, aside from artificial phlegmons caused by the injection of ammonia or turpentine, in abscess of the subcutaneous fatty tissue, the tissues are first prepared, as it were, by the chemical products of the so-called pyogenic bacteria (staphylococcus pyogenes aureus, albus, streptococcus), and then the bacteria multiply and carry the process further by the formation of new alkaloids.

Experiments have shown that many organisms not usually considered pyogenic—*e. g.*, micrococcus prodigiosus—furnish chemical products capable of exciting inflammation and suppuration; but as these substances have not yet been thoroughly studied, it is better to begin research in the new field with those ptomaines which have already been isolated. For this reason Grawitz used in the experiments now under consideration *cadaverine*, a non-poisonous alkaloid discovered by Brieger as the result of putrefaction in various substances from different causes, and the morbific effects of which had not previously been accurately studied. This alkaloid occurs as a colorless liquid, soluble in water, and in dilution of one per cent. has a strong alkaline reaction. The pure alkaloid contains no bacteria, so that dilutions with sterilized water are easily prepared. A 2.5 per cent. solution kills staphylococcus aureus in an hour, while extremely small amounts retard or check the growth of these bacteria. All cadaverine producers, therefore, may be considered as antagonistic to the pyogenic cocci in the sense of Garrè, though practically this fact has not the value the latter observer seems to impute to it, for Grawitz's experiments show that cadaverine is itself pyogenic. By the subcutaneous injection of solutions of cadaverine which were free from germs the result was, according to amount and concentration, either escharotic action or inflammation followed by suppuration or inflammatory œdema, with subsequent absorption and simple healing.

For the details we must refer the reader to the original paper. The experiment, which is quoted at length, seems to prove beyond doubt that the alkaloid caused suppuration without the presence of bacteria. Most of the cases are without bearing on the question, as necrosis of the skin came on so soon that bacteria were able to penetrate it. In some cases the bacteria—large bacilli—were found in large numbers. They could not be successfully cultivated in agar-agar. That they were not the cause of the suppuration is evident from the fact that pus containing them injected into dogs was absorbed without any evil consequence, and when the cadaverine had exerted its greatest escharotic effect no suppuration followed, though then the bacilli could enter with least difficulty. That the bacilli or their spores were introduced at the time of injection is rendered improbable by the fact that weak solutions were absorbed both in dogs and rabbits. The effect was, therefore, as stated above, in proportion to the quantity and concentration of the alkaloid. Injections of mixtures of staphylococcus aureus and cadaverine were absorbed when the dilution was carried far enough, while strong solutions killed the microbes before the inflammatory exudation could cause a further dilution. In the resulting abscesses only the bacilli spoken of above were found, and no culture of the yellow coccus could be made.

In one group of cases injection of cadaverine with staphylococcus aureus caused phlegmon in the surrounding tissue beside the necrosis of the skin, and in the pus of the phlegmon were found the staphylococcus and various other bacteria. It follows that cadaverine can cause purulent inflammation, and when pyogenic microbes are present they can still further promote the suppurative action.

It is of great practical importance, as shown by Grawitz, that cadaverine, a common result of putrefaction, when introduced into the tissues can cause inflammation and suppuration. For it proves that the old views, according to which putrefaction of wound secretions caused pyæmic disease, are still valid. These observations, by so competent an investigator as Grawitz, deserve careful study and repetition. As said before, they have an important bearing on the subject of suppuration. That they will alter the well-grounded belief that in nature all suppurations are caused by bacteria—in other words, "with-

out microbes no suppuration"—is not probable. It is quite evident there are a number of microörganisms beside the few with the specific name "pyogenic" that in some way or other cause suppuration, and as the putrefactive alkaloids are the results of bacterial action, it is only making another step in the process and not altering the conditions, to unite the alkaloid directly with the suppuration.

Although in these experiments no general effect on the animals used could be made out, we have no doubt that further research with the putrefactive alkaloids will lead to an immense increase of our knowledge of infectious diseases in the narrower sense.

A NOVEL experiment in medical teaching is to be tried at the University this coming week. All medical men have felt the great need of practical instruction in what may be called "Medical Dietetics," the lack of which has often sorely tried the young practitioner when asked by his patients such questions as how to make beef tea, wine whey, and the various delicate foods so needed by the sick. As a matter of fact, how can one give directions unless some previous training has made him competent to do so?

Dr. George Strawbridge, assisted by Miss Davis, proposes to give a course of illustrated lectures on every Wednesday afternoon to cover this ground.

The first lecture will be next Wednesday, at 4.30 P. M., at the University Hospital. *The preparation of milk foods* will be the subject, and the lecture will be illustrated by practical demonstrations.

The second lecture, on the following Wednesday, will be on the *preparation of beef tea, broths, etc.*, the *proper method of cooking meats, vegetables, etc.;* and like subjects will be taken up in order.

The course is open to the medical profession without fee.

THE patient upon whom PROF. JOHN G. JAY, of Baltimore, performed the Sänger-Cæsarean section four weeks ago, has now recovered, so far as the operation is concerned. There has been but little rise of temperature during the course of the case, and, it might be said, no unfavorable symptom. The secret of success is early operation, close suturing of the uterine wound, and surgical cleanliness. We are informed that six operations, with four recoveries, have been performed in this country during this year.

AT the meeting of the Berlin Medical Society on October 12, 1887, a communication from Secretary-General Hamilton was read, announcing to the Society the choice of Berlin as the meeting place for the next International Medical Congress.

Professor Virchow, president of the Society, read the communication, which had been also sent to von Bergmann and Waldeyer.

PROFESSOR VON BERGMANN succeeds VON LANGENBECK as editor-in-chief of the *Archiv für klinische Chirurgie.*

THE DEATH OF DR. ROBERT GREENHALGH, formerly accoucheur and lecturer to St. Bartholomew's Hospital, is announced. Twenty years ago he performed a successful Cæsarean section for epithelioma of the cervix, and he was one of the earliest advocates of measures of surgical treatment in contracted pelvis, now acknowledged to be correct.

SOCIETY PROCEEDINGS.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, November 3, 1887.

THE PRESIDENT, T. M. DRYSDALE, M.D., IN THE CHAIR.

CATHETERIZATION OF THE URETERS.

DR. B. C. HIRST said that, after seeing the urethral catheters that were shown by Dr. Kelly at the last meeting of the Society, and hearing his commendation of them, a case came under his observation in the Maternity Hospital which seemed eminently suitable for the application of these instruments as an aid in arriving at a correct diagnosis. The clinical history of the case is briefly as follow: A young primagravida was found to have both pus and albumen in her urine, which condition persisted after delivery. The case was treated as one of cystitis, by vesical injections, but without much benefit. Some three weeks afier delivery, the quantity of urine excreted in twenty-four hours became decidedly lessened, while the amount of pus became both actually and relatively much decreased. At the same time the temperature rose to 104°, and there was considerable pain over the region of the right kidney. This history would, of course, have led one to suspect "lithogenic pyelitis," resulting in the formation of a stone in the pelvis of the right kidney, which had suddenly plugged up the outlet from the kidney and has thus diminished the quantity of urine and decreased the amount of pus. Answers to the following questions were desirable: 1. Was the *right kidney* chiefly affected, or was the pain on the right side referable to a morbid condition of the left kidney? a possibility to which attention has been called, especially by Knowlsley Thornton. 2. Were both kidneys diseased, or was one healthy? 3. Did the pus really come from the kidneys, or was it confined to the bladder? He was able to solve these problems by the use of the ureteral catheters. The ureters were made out without difficulty by abdominal palpation, and then the catheters, first the metal and then the flexible, were introduced with ease, the flexible catheter being pushed up the right ureter a distance of eight and a half inches. The specimens of urine collected in separate test tubes from each kidney, showed, on inspection, a much greater turbidity in that from the right than in that from the left kidney. A microscopic examination

revealed pus in both specimens, but in that from the right side in much larger amounts than in the specimen from the left kidney. In the urine from the left side a well-defined granular cast was found. He could say, then, 1. That the pus came from the kidneys. 2. That both kidneys are diseased, but the right is most markedly affected. 3. That there is not only pyelitis, but pyelo-nephritis in the left kidney; arriving thus at a precision in diagnosis that would be impossible without the aid of the ureteral catheter.

DR. HAMILL had, since the last meeting, palpated the ureters without difficulty, and had passed the catheter into them. The ureters were about the size of the little finger.

DR. KELLY has, since the last meeting, operated successfully for the relief of a ureteritis in an unmarried young woman; the pelvic organs were healthy. The inflammation was confined to the orifices of the ureters. He experienced no difficulty in passing the catheters.

DR. PHILIP M. SCHIEDT read a paper on

THE DELIVERY OF THE AFTER-COMING HEAD.

"Time is the great factor in these cases. It is generally conceded that if the head is not delivered in from five to eight minutes after the delivery of the body, the child will be stillborn." Dr. Schiedt took up the history of the literature of the subject from the time of Celsus, and the method of "expression" by suprapubic pressure, down through the various manual methods. He deprecated the neglect of this subject by American and English authors, and entered very fully into a criticism of the methods advocated by German and French writers. His own deduction from an analysis and comparison of these authorities, who widely differ in their teachings, and from his own experience, is that the forceps constitute "the best, quickest, and safest treatment."

DR. WILLIAM GOODELL had been struck by what seemed to him a great, although common mistake, trying to secure flexion of the head in breech deliveries. In a flattened pelvis it is better for the head to descend in a transverse position, so as to enable its shortest diameter, the bitemporal, to correspond to the short diameter of the pelvis, the antero-posterior. In a juxtominor pelvis the operator would be justified in trying to secure flexion. The fingers in the fœtal mouth are useless for good, and there is danger of breaking the jaw. The forceps is the only proper aid in the expulsion of the after-coming head. One objection often made to their use is the loss of time involved in their application, but this does not hold. The accoucheur should be acquainted with the form of the patient's pelvis. The body of the child should be held away, so that the forceps can be applied to the sides of the head, the handles being on the anterior aspect of the child's body. Another point to bear in mind in a flattened pelvis, is the problem of bringing the head safely around the promontory of the sacrum. The hand should grasp the neck of the child, the thumb being on one side and the fingers on the other, and traction should be made so as to ease the head around the promontory base, securing rotation of the face into the hollow of the sacrum. After this it would be easy to make the chin engage or to apply the forceps.

DR. LONGAKER laid great stress upon the necessity of avoiding mismanagement in the early stages of a breech delivery; there should be no immediate haste. If the legs are seized and drawn down upon, the body is quickly delivered without securing dilatation of the os uteri and the arms become extended beside the head in the grasp of the lower segment of the uterus; forcible extraction at this stage is a frequent cause of extensive laceration and has caused death of the mother. He agreed with Dr. Goodell as to the treatment of these cases in flattened pelves; the adaptation of the bitemporal diameter to the direct conjugate should be secured and the obliquity of Nagele should be maintained until the anterior base has well descended into the cavity of the pelvis. The late Dr. A. H. Smith laid great stress on the propriety of using the forceps to assist in the delivery of the after-coming head. In applying the forceps, flex the body of the child toward the dorsum, and the handles of the forceps should be on its anterior aspect. Pressure over the head of the child, while the body is swept toward the belly of the mother is not a good or safe method: the amount of traction required to extract the head is too great for the neck to bear. The forceps should be in readiness to apply as soon as the body has escaped from the vulva.

DR. ELLWOOD WILSON thought it a common mistake to hurry the delivery of the body of the child. When dilatation of the os is complete the child will descend with the arms folded on the body. He is as strong an advocate of the application of the forceps to the after-coming head as any man can possibly be.

DR. THOMAS M. DRYSDALE reported a

CÆSAREAN OPERATION

(see p. 621),

made necessary by the presence of a uterine fibroma impacted in the pelvis.

NEW YORK SURGICAL SOCIETY.

Stated Meeting, November 9, 1887.

THE PRESIDENT, CHARLES MCBURNEY, M.D., IN THE CHAIR.

SUCCESSFUL CASE OF LAPAROTOMY FOR BULLET-WOUND OF THE INTESTINE.

DR. LANGE reported the following case: On the 12th of October he saw at the German Hospital a boy, fourteen years of age, who, twenty-four hours before, while playing with a small revolver (22 calibre), shot himself in the abdomen, the ball entering about one and a quarter inches below the navel, and about one inch to the left of the median line. He did not look as if he was suffering from shock. His pulse was 112 to 120, his temperature 101°, and he did not have much pain, although there was marked tenderness on making pressure over the left hypogastrium. There was some tympanites, and the abdominal wall was tense; the breathing was almost entirely costal. The normal liver-dulness was preserved, and there was no change in the ordinary percussion sounds. There was evidently commencing peritonitis, thus far limited to the left hypogastric region.

Laparotomy was performed at once, the abdomen being opened in a line with the point of entrance of the

bullet. The track of the latter could not be traced through the muscles, nor could any wound be found in the peritoneum, although there was a small extravasation in the retroperitoneal space. On opening the peritoneum, about an ounce of brownish, sanguinolent fluid escaped. The wound was enlarged to about six inches, and the intestines were lifted out and carefully examined. Seven perforations were found in the gut, both walls being pierced in three places, while the fourth wound involved only one wall. About four ounces of bloody fluid were discovered at the deepest point of the abdominal cavity, but it did not have a fecal odor, nor was any fecal matter mingled with it. The openings in the intestinal wall appeared as small, grayish spots surrounded by zones of hyperæmia. The mucous membrane was nowhere everted, but all the openings seemed to be firmly closed. At one point the track of the ball was visible in the wall of the gut. Six of the perforations were closed with three or four interrupted sutures of iodoform catgut, while the seventh was not touched, as it seemed to be firmly united.

The boy made a good recovery. The temperature did not rise above 101°, and became normal on the twelfth day, after evacuation of a mural abscess. The bowels moved spontaneously on the third day, in spite of opium, the discharge being dark in color and very fetid, this being probably due to decomposed blood. During the next four days they moved three or four times daily. The ball was not found in the stools, although search was made for it.

The interesting question in the case was: Might the boy have recovered if no operation had been performed? The exudation and extravasation might have been absorbed, and the peritonitis localized. To what degree, the reporter was asked, did the danger from gunshot wounds increase in proportion to the size of the projectile? There were cases on record in which spontaneous recovery had followed wounds from small bullets. In the one reported there was no evidence that fecal extravasation had occurred, and apparently the closure of the small wounds had taken place so promptly and accurately, that under proper care and treatment, without operation, the danger of secondary escape of the contents of the gut could naturally have been avoided.

DR. STIMSON recalled the case of a man who received a bullet wound of the abdomen, the ball, which was of moderate size, entering a little to the left of the median line, midway between the border of the ribs and the umbilicus. He saw the patient on the following day, and found a slight elevation of temperature, with marked tympanites. The wound was not probed, but there was good reason to believe that the bullet had passed into the abdominal cavity. Opium was administered, and the patient made a good recovery.

DR. WYETH said that in July, 1887, he had been called to a neighboring city to see a boy, aged sixteen years, who had been wounded by a rifle-ball (38 calibre), which entered the abdomen at a point two inches above the crest of the right ilium, and half-way between that spot and the spines of the vertebræ, and came out one inch below and to the left of the umbilicus. The boy complained of severe pain and suffered from shock, lasting for four or five hours, after which he rallied, and was in good condition from 10 P.M. until 6 the next morning, when symptoms of peritonitis developed. Dr. Wyeth saw him at 1 P.M., nineteen hours after the accident, and found him delirious, with a pulse of 160, a high temperature, and a tympanitic abdomen. He declined to operate, as death was inevitable. The patient died two hours later. The boy was strong and hearty, and would probably have recovered if laparotomy had been performed at once. Although an autopsy could not be obtained, the intestine was doubtless perforated.

DR. HALL said that he had seen two cases of recovery from bullet wounds made with a 22-calibre revolver ball. He asked if any of the members had seen a fatal case.

DR. ABBE replied in the affirmative. He had had under his care a strong man, who had received a wound in the abdomen from a bullet of 22 calibre. The ball entered just below the umbilicus, and exactly in the median line, perforating the intestine in four places, and the wall of the bladder in one; it remained within the latter viscus. Laparotomy was performed six hours after the injury occurred, and a pint of greenish fluid, mixed with fecal matter, was found just underneath the parietal wound, and surrounded by adhesions. The man died of shock fifteen hours after the accident. Uræmia doubtless contributed to his death, as complete suppression of urine occurred several hours before.

DR. WYETH cited an instance of the rapid formation of adhesions after a secondary laparotomy for volvulus of the intestine. The gut was so distended that it was necessary to puncture it in several places, the punctures being closed with sutures of black silk. The patient died in three hours, and even in that short time the sutures had become almost entirely concealed by plastic lymph.

DR. STIMSON said that about a year ago he had seen a gentleman who had accidentally shot himself with a revolver of 45 calibre, the ball entering the body a little to the left of the xiphoid cartilage and emerging at a lower point in the back, near the vertebral column. When seen he had paroxysmal dyspnœa with extreme pain. The wound was not probed, except to a sufficient depth to establish the fact that the ball had perforated the seventh costal cartilage; it was plugged with iodoform gauze. Under the use of opium, with rest, the patient recovered in three weeks. The bullet probably traversed the anterior part of the diaphragm, perhaps also the abdominal cavity, and certainly perforated the pleura, as the man had all the symptoms of perforation of the lung—hæmoptysis, with dulness over the lower part of the chest.

DR. LANGE thought that it was important to gather further experience about the question how soon after an average perforation of the intestine, with fecal extravasation, symptoms of septic peritonitis appeared, and, whether perhaps in a case like the one reported, where twenty-four hours after the injury only localized peritonitis existed, without particularly alarming symptoms, the assumption might be justified that the peritonitis was not due to the escape of the contents of the gut into the peritoneal cavity. The operation, which became necessary in searching for bullet-wounds in the gut, would always be a serious surgical interference, carrying danger in itself, to avoid which might, in a given case, be of the greatest importance.

DR. SANDS said that laparotomy in gunshot wounds

of the abdomen ought to be performed before the occurrence of septic symptoms. Experience must show how far we may safely explore the abdomen in order to ascertain the exact nature of an injury. Many patients doubtless lose their lives because the surgeon waits too long. Recovery, to be sure, is possible in the case of wounds made by small projectiles, but even those of small calibre may cause fatal extravasation. If it can be shown that laparotomy is not in itself very dangerous, it may obtain the preference in nearly every doubtful case, even when the bullet is very small. Until we know just what the risks of operation are, most surgeons will favor laparotomy. It may subsequently be shown that laparotomy for gunshot wounds of the abdomen is a very dangerous procedure, and the statistics will perhaps never bear comparison with the operations performed for the removal of ovarian tumors.

DR. STIMSON thought it equally important to collect evidence to show the danger following perforation of the abdomen by bullets of small calibre, for if that danger is less than that of explorative laparotomy, the operation may still be contra-indicated.

DR. WYETH thought that the reason why wounds of intestine made by small projectiles do not invariably prove fatal, is due to the fact that the gut was not filled with gas at the time of the injury. If gas be present, it may escape into the peritoneal cavity, no matter how small the perforation.

DR. ABBE called attention to the fact that in his case fecal extravasation had clearly taken place from one wound in the free border of the intestine. At every inspiration of the patient fluid was forced out at this point. It was evident that extravasation through such openings is inevitable as soon as the gut becomes full; whereas, when the perforations are at or near the attached border this is not apt to occur.

DR. HALL said that he could recall only a single case in which recovery had occurred after fecal extravasation. In one instance (reported by Mikulicz) some pieces of potato, but apparently no feces, escaped through a perforation resulting from a typhoid ulcer.

DR. LANGE was sure that there were several cases on record in which recovery occurred after extravasation.

MARKED DIMINUTION IN THE SIZE OF A UTERINE FIBROID FOLLOWING REMOVAL OF THE APPENDAGES.

DR. ABBE showed photographs of a patient upon whom he had operated a year before. She was a colored woman, aged twenty-four years, who had a uterine fibroid as large as a man's head, of three or four years' growth, which occasioned severe pain and attacks of flooding. Laparotomy was performed, with the assistance of Dr. Peters. It was necessary to lift the growth out of the pelvis before the appendages could be reached and removed, so that an intelligent idea of its size was gained. She made a good recovery, and had been perfectly well since the operation, so that she was able to work hard as a laundress. Menstruation recurred regularly at intervals of twenty-eight days, but there was neither pain nor flooding. Her sexual feelings were not impaired. The girl was examined a day or two since, and it was found that the tumor had diminished in size, at least, one-half.

DR. LANGE said that he had had two patients under observation for upward of a year, upon whom he had performed the same operation. In both cases the growth had diminished to one-half the former size. One patient had not menstruated at all; the other had continued to menstruate for some time, and then had epistaxis every month instead.

DR. BRIDDON asked if the persistent menstruation could not be explained by reference to the presence of a third ovary.

DR. ABBE thought that this explanation could not be generally urged, because the recorded cases of supernumerary ovaries are comparatively few, while persistent menstruation after removal of the appendages, is not uncommon.

CALCULUS OF PECULIAR SHAPE.

THE PRESIDENT exhibited two calculi which he had removed by the lateral section, from a boy, aged eleven years. One stone was almond-shaped, while the other was larger and presented two concave surfaces, which had apparently resulted from alternate friction against the other calculus. There was nothing peculiar about the shape of the bladder.

DR. LANGE asked if the biconcave stone might not contain a foreign body.

THE PRESIDENT did not see how this would account for the peculiar shape of the calculus.

DR. BRIDDON said that if a foreign body formed the nucleus it would be apt to have concentric layers completely surrounding it.

PHILADELPHIA ACADEMY OF SURGERY.

Stated Meeting, November 7, 1887.

THE PRESIDENT, D. HAYES AGNEW, M.D., IN THE CHAIR.

DR. THOMAS G. MORTON reported

THREE CASES OF LAPAROTOMY

which he had performed in the last five weeks, all of which recovered.

Case I.—A colored woman, aged twenty-six years, admitted to the Pennsylvania Hospital, September 20th, complaining of intense pain. The history was that two years prior to admission she had an abortion and that since then there have been many attacks of undoubted gonorrhœal infection. At the time of admission her features were pinched and temperature was 102°. Shortly afterward she had a sharp chill with a rigor which lasted half an hour. The right Fallopian tube was found much enlarged and there was evidently an abscess of considerable size connected with it. The left tube was also much enlarged, but he could not make out any distinct abscess connected with it.

Early the following morning the abdomen was thoroughly cleansed and an incision made. The left ovary, which was enormously enlarged, was bound down by adhesions, and an abscess, which was as large as a goose egg and connected with the right ovary, ruptured during the operation, the contents of the

abscess escaping into the peritoneal cavity. The tubes and ovaries were removed, the cavity thoroughly washed out with hot distilled water, and a drainage tube inserted in the lowest part of the abdominal cavity. In the tube was placed, as has been suggested by Dr. Joseph Price, a rope of absorbent cotton, which can be replaced as often as it becomes saturated with the discharge. This patient made a rapid recovery. Within twenty-four hours the temperature dropped from 102° to 99°. She is now perfectly well.

Case II.—Oct. 11th, a mulatto seamstress, aged twenty-seven, married, was admitted with prolapse of the right ovary. She complained of pain in the hypogastrium, the small of the back, the occiput, the vertex, and under the left breast, increased by motion, by defecation, by urination, and on the appearance of the menses, which had been irregular. Her general health had failed and for more than a year she had been unable to do any work. She has been married eleven years, but does not live with her husband. Has never had children. The uterus was normal, retroverted, and retroflexed. The right ovary was prolapsed, slightly enlarged, moderately fixed, and exquisitely tender. She was ordered hot vaginal douches twice a day with quinine. October 16th, the abdomen and pubes were shaved and washed with turpentine, soap, and water, and were covered with towels wet with the bichloride solution. Fifteen grains of quinine were given in the evening. The following day laparotomy was performed, an incision two and a half inches in length being made. The right ovary and tube were brought out after a few adhesions had been separated. Irrigation with boiled distilled water was then practised, and a glass drainage tube introduced. The wound was closed with catgut sutures. The cotton rope in the tube was changed as frequently as it became saturated with the bloody serum. The tube was left in until October 31st. On one occasion the temperature went up to 101.5°; this was due to constipation, and promptly dropped upon free exhibition of laxatives.

Case III. was interesting from the fact that it was unattended by symptoms from first to last. A colored woman, aged twenty, had been stabbed whilst at a ball, and was admitted to the hospital on the evening of Oct. 24th. The knife entered on the left side between the umbilicus and the anterior superior spinous process of the ilium, two and one-half inches from the latter. At the time of admission a mass of omentum protruded from the wound. He saw her about 11 P.M.; she was in fairly good condition. As there was undoubted penetration of the peritoneal cavity, he had no hesitancy in at once making a median incision five inches long. The intestines were carefully examined throughout their whole length, but no injury was found. The omentum was returned, and the abdominal wound closed with four silk and seven catgut sutures. No drainage tube was employed. The next morning she got out of bed, and insisted on going home. She was constrained to remain until the sixth day, when she went home and resumed her usual duties. Five days later she returned to the hospital and had the stitches removed. The temperature never went above 99°. He has visited her twice since, and she was perfectly well when last seen, a couple of days ago.

There is one point with reference to the drainage tube to which he desired to allude. When a drainage tube is introduced, it is, of course, surrounded by intestines, and it seems remarkable that there should be no inflammatory action about it, other than sufficient to cause the exudation of the column of lymph which surrounds the tube.

DR. D. HAYES AGNEW said that he recently saw a case where an attempt had been made to remove an abscess, the result of periuterine cellulitis. In cutting down the bowel was opened. A tube was then put in, and when removed, a short time after the operation, there was left a perfect canal communicating with the bowel, through which feces escaped. The tube had been allowed to remain ten days.

DR. WILLIAM HUNT said that the rapidity with which this exudation takes place explains many cases of recovery after wounds of the intestine where laparotomy has not been performed.

DR. O. H. ALLIS pointed out that in stab-wounds of the abdomen it is often difficult to say what damage has been done. A party of children were playing football in a neighboring town. While one of the children was repairing the ball some one pushed him, and the blade of a penknife penetrated the abdomen. The wound did not cause any pain, and nothing was known of it until the development of peritonitis.

DR. J. M. BARTON said that it is often claimed that there is no danger from a laparotomy, but there is a certain element of risk. He thought that it is a matter of great importance not to open the abdomen unless there are symptoms calling for it. He has now under observation a young man who, a short time ago, while gunning, slept in an unfinished club-house. During the night he got up and walked out of an open doorway in the second story, falling a distance of twelve feet and striking the abdomen on the edge of a rafter. He was considerably shocked and lay in the club-house until morning, when he walked a distance of a mile and a half to the railroad station. That evening he had decided peritonitis. When seen in consultation the following morning, the question arose as to the advisability of opening the abdomen. From the fact that the man had been able to walk a long distance, he concluded that there had been no rupture of the intestine. If there had been, he should have expected decided collapse. The peritonitis was violent and the temperature high. Under ordinary treatment the man recovered in a week's time.

DR. THOMAS G. MORTON said that in connection with suppurative disease of the tubes, he would refer similar disease attacking the testicle to extension by continuity of specific inflammation of the urethra. He recently had a case of great enlargement, the result, apparently, of ordinary inflammation of the testicle, in a man, fifty years of age, who had a hernia on the affected side and was unable to wear a truss on account of the condition of the testicle. He decided to remove the testicle, believing that there was degeneration of the gland. In the centre of the testicle a cavity containing two and one-half drachms of pus was found. He had another similar case, convalescent, in which he pursued the same treatment, and found similar conditions. There is no reason why suppurative inflammation should not analogously travel along the tube in the one case as well as in the other.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, November 9, 1887.

THE PRESIDENT, J. SOLIS-COHEN, M.D., IN THE CHAIR.

DR. SOLOMON SOLIS-COHEN read a paper on

LAVAGE IN THE TREATMENT OF GASTRIC AFFECTIONS.

Any agent, or any method which promises to enlarge our therapeutic resources against those obstinate conditions of "gastric catarrh," "functional dyspepsia," etc., which are a source of distress to the patient, of annoyance to the physician, and of profit to the pepsin and patent-medicine manufacturers, deserves at least a respectful consideration. The method of lavage, or irrigation of the stomach, has been employed for many years in Europe, so that it can no longer be considered to be merely on trial. In America, however, it has not won general introduction.

In the treatment of the more readily accessible mucous surfaces, whether of the eye, the nose, the throat, the vagina, or the urethra, the importance of keeping the parts free from morbid secretions, from the products of desquamation, and other sources of irritation, is not a matter for debate. The extension of the same principle to the treatment of affections of the gastric mucous membrane, is but a question of mechanical detail, not of therapeutic justification. Kussmaul, in 1867, employed a doubly-acting stomach pump to irrigate the stomach with alkaline solutions (Carlsbad water), and it is to this observer that we are principally indebted for a study of the method, mechanically and therapeutically.

The apparatus and its employment are sufficiently simple. An œsophageal tube with blunt, double-eyed extremity, of flexible rubber, about twenty-eight inches long, and from one-quarter of an inch to a little less than half an inch in diameter, is attached by a small section of glass tubing to a soft-rubber tube about one yard in length, into the free extremity of which a glass or rubber funnel, of from six ounces to eight ounces capacity, is inserted. Sometimes the free extremity of the œsophageal tube is slightly stiffened. The œsophageal tube having been dipped into warm water or warm milk, is placed within the entrance of the œsophagus, and is then propelled by successive pushes into the stomach; the process being facilitated by efforts at deglutition on the part of the patient.

The funnel is then elevated to the level of the patient's forehead, and from a pint to a quart or more of the lavage solution is slowly poured in; the glass junction tube permitting its passage to be watched, and obstruction or attempted regurgitation to be detected. The patient's sensations will usually inform us when a sufficient quantity of the solution has entered the stomach. As the last portion of liquid disappears from the funnel, the soft-rubber tube is pinched near the extremity, the funnel is rapidly inverted over a receptacle placed upon the floor; and the contents of the stomach are thus removed by siphonage. These manœuvres are repeated until the returned fluid is clear. Sometimes during the withdrawal of the solution, solid particles of food (grains of corn in one of my cases) may become impacted in the eyes of the tube, and the flow of liquid will cease. A little more of the solution must then be introduced, both to wash away the obstruction and to reëstablish the siphon current. If the tube should be pushed too far into the cavity of the stomach, it may curve upon itself and the siphon will not work. Withdrawal of the tube for a few inches will remedy this.

When *lavation* alone (washing) is the object of the procedure, a weak alkaline solution is employed; a drachm or two of sodium sulphate, sodium chloride, sodium borate, or sodium bicarbonate, in a quart of warm water, at about 100° F. Should it be considered necessary, however, various sedative or antiseptic medicaments may be added to the lavage solution. Those most highly recommended are resorcin (one per cent.), boric acid (one per cent.), creasote (one per cent.), carbon disulphide water (one part of a solution containing fifteen grains to the quart, to two parts of water), charcoal powder (two to four tablespoonfuls), chloroform water (saturated), bismuth subnitrate (two tablespoonfuls to the pint). In the use of agents like resorcin, carbolic acid, etc., the liability to absorption if the solution be not all removed, must not be forgotten.

The effects are said to be most marked in cases of dilatation of the stomach, in which delayed digestion, retention and putrid fermentation of the contents of the stomach, give rise to distressing symptoms. In all cases where the gastric mucous membrane is in a catarrhal condition, coated with the glairy mucus which is seen amid vomited matters, or bathed in the sour liquid ejected as "water-brash;" where the production of gastric juice is impeded, or the secretion altered in quality by an abnormal condition of the membrane, extending perhaps into the tubules, or by the presence of irritative matters; where fermentation of ingested and retained matters takes place; in short, in the typical case of chronic gastric catarrh or acid dyspepsia, lavage will be found highly useful. It removes any undigested matters remaining in the viscus, cleanses it from products of desquamation and morbid secretion, and gently stimulates the glands and absorbents to healthy action.

In the chronic gastritis of drunkards, the measure is said to be an excellent palliative, nor is hæmatemesis considered a counter-indication, unless actual ulceration exists. In cancer of the stomach it is useful as a palliative measure.

Within the last few years two new applications of the lavage method have been found. In 1885, at Kussmaul's clinic, and subsequently by Senator, Rosenthal, and other observers, it has been successfully employed in the treatment of ileus. Kussmaul explains this result by the theory of relief to the tension above the point of constriction, caused by gases and accumulated feces; with concomitant restoration of normal peristaltic action.

While the practice is usually confined to chronic cases, Dr. Cohen had occasion to resort to it in one case of acute indigestion with obstinate vomiting, in a phthisical, slightly hysterical female; with gratifying result—in that the vomiting, rebellious to diet and medication, yielded to two applications of the stomach tube. In this case, before withdrawing the tube, warm milk was introduced into the stomach. Indeed, there can be little doubt that, in connection with *gavage*, or forced feeding, irrigation of the stomach assists in maintaining nutrition in phthisis and other wasting diseases.

DR. J. TYSON said that in one case of dilatation of the

stomach he had used lavage with a great deal of comfort to the patient. In a second case in which he employed it, the result was not so satisfactory, and it caused great discomfort.

DR. W. OSLER said he should like to state his experience in the use of irrigation, as this is a measure in which he has been interested for several years. In the first place, there is serious objection made to the procedure by at least one-half of the patients, on account of the discomfort experienced in the introduction of the tube. The soft tube is sometimes very difficult to pass, and sometimes it is necessary to resort to the stiffer tube. Where the patient himself performs the operation, it is, of course, better that he should have the soft tube. He is of the opinion that this measure has a much narrower field than the statements of French and German writers would lead one to infer. He would not hesitate to predict that within a few years, when the fashion has subsided, this measure will be confined entirely to cases of obstinate gastric catarrh in which it is of inestimable service, and to cases of dilatation of the stomach, in which it is not only of service but absolutely indispensable, as we have no satisfactory treatment for dilatation of the stomach other than irrigation.

DR. J. P. C. GRIFFITH said that during the past year he had been much interested in lavage in the diagnosis of diseases of the stomach. We, in America, are, however, unable to study the matter to any great extent, owing to the rebellion of patients to this method of examination. German patients appear to be more tractable, and Riegel reports that during the year 1885 he made over 1300 examinations of the gastric juice in 122 cases; and in 1886, tested 134 cases in a similar way. Every patient presenting evidences of disease of the stomach was submitted to lavage, and the gastric contents thus obtained were subjected to a chemical examination. Riegel's method is to administer to the patient an ordinary mixed meal, and after about six hours—the stomach should be empty at the end of seven hours—to remove the gastric contents, if possible, undiluted by the employment of water, and to filter them. He then tests the filtrate in order to determine especially the presence or absence of hydrochloric acid, and the peptic strength. The tests are at once simple and very delicate. He employs a variety of these, but the ones which have proved most satisfactory in the speaker's hands, and with which he feels most familiar, are the reactions with methyl-violet and Congo-red for hydrochloric acid; and Uffelmann's carbolated iron test, for lactic acid. In the presence of a small amount of free hydrochloric acid a dilute solution of methyl-violet will turn to a blue color, and Congo-red will also be changed by the acid to a blue.

The results of Riegel's experiments are very interesting, and have been fully confirmed by Korczinski and Jaworski, and by Sansoni. It has been found that in carcinoma of the stomach hydrochloric acid is almost invariably absent, and that the peptic strength of the gastric juice is wanting; so that the attempt to digest albumen artificially with the filtrate fails. In dilatation of the stomach there is always a large amount of lactic and butyric acids, though hydrochloric acid and pepsin are also present. In dilatation, therefore, the trouble is not due to lack of digestive power, but to stenosis or to want of muscular power. Gastric ulcer is almost always preceded and accompanied by a hyper-secretion of hydrochloric acid. In cases of ordinary dyspepsia there is not a diminution of the gastric juice, but usually a hyper-secretion. Riegel claims, therefore, that it is bad therapy to put every case of dyspepsia on a routine treatment of hydrochloric acid and pepsin; and that the chemical examination of the gastric contents is a *sine qua non*.

A case recently in the University Hospital illustrates the value of this aid to diagnosis. A man was admitted in an extremely anæmic and emaciated condition, and with subjective and objective symptoms of gastrectasia. The signs of this disappeared, however, when the diet was carefully regulated; but in spite of the apparent digestion and absorption of food, he became more anæmic and weaker. The diagnosis of carcinoma of the stomach was entertained, and it was thought that some induration could be detected in the pyloric region; but the contents of the stomach were removed with the tube, and the filtrate found to contain an abundant supply of free hydrochloric acid, and to digest albumen perfectly. On this ground carcinoma of the stomach was excluded. The man subsequently died, and cancer was found to be absent; the source of the induration being a thickened and somewhat stenosed pylorus, due to a duodenal ulcer.

There is at the present time another case in the hospital, where gastric ulcer has been suspected, but the examination of the contents of his stomach has shown that digestion is retarded, and that there is no reaction for hydrochloric acid with the methyl-violet test. Assuming that the German observers are correct, the presence of ulcer is excluded in this case.

THE PRESIDENT said that he could personally speak of the value of lavage in the treatment of dilatation of the stomach and in carcinoma. For the past twelve years, at least, he has been in the habit of using this measure, from time to time, during his terms of service at the German Hospital. Following the example of Kussmaul, he has usually used a solution of the Carlsbad salt of the strength of the natural water. In cases of dyspepsia he has more recently preferred to use copious draughts of hot water to wash the contents of the stomach into the bowel. In the introduction of the tube into the stomach a great deal depends upon the skill and experience of the manipulator. He suggested that the tube could probably be swallowed with greater ease, if its lower end were weighted with a ring of lead.

DR. S. S. COHEN said that his experience has been that it is difficult to get patients to submit o this measure. If, however, the first three or four times can be bridged over, the relief afforded is so great that the patient will allow it to be continued as long as necessary. The results obtained in cases of obstinate gastric catarrh, after the failure of all medication and regulation of diet, have been so satisfactory in the relief of symptoms, and in the almost reëstablishment of the normal condition, that he is encouraged to continue the use of the procedure. In dilatation of the stomach it is especially recommended, and is the only thing to be done. It would seem that in cases of vomiting due to the presence of sarcinæ, washing out of the stomach, with the subsequent introduction of a sufficient quantity of some safe antiseptic solution, would be one of the best plans of treatment. The tube has also been used in cases of poisoning, where the stomach-pump was not at hand.

DR. E. T. BRUEN reported the following case of

LAPAROTOMY FOR TUBERCULAR PERITONITIS.

John B., aged thirty-four. Admitted to the Philadelphia Hospital May 8, 1887, with the physical signs of dry pleurisy, and of diffused thickening of the lower portion of the right lung. The sputa contained numerous bacilli of tuberculosis. The abdomen was prominent and distended with fluid in the central portion. The liquid in the central portions of the abdominal cavity was apparently confined in a species of sac, owing to adhesions formed between the peritoneum and the colon, since changing the position of the patient did not change the distribution of the fluid. The liver and spleen were also enlarged, and there was marked dulness in the flanks and lumbar regions posteriorly. The abdominal distention rapidly increased, uninfluenced by any treatment which was instituted. On June 18th a gallon of clear serum, with some few shreds of lymph, was withdrawn. Unfortunately, paracentesis was necessitated about every three weeks thereafter on account of the rapid accumulation of the fluid, and the dyspnœa occasioned by it. The pulmonary process being latent, and the general condition of the patient excellent, laparotomy was suggested, and it was thought that possibly by irrigation of the abdominal cavity with antiseptic solutions the character of the inflammatory process could be modified and the reaccumulation of fluid prevented. On June 28th Dr. Deaver opened the peritoneal cavity evacuating a large amount of serum, but no pus.

The peritoneal surface was injected, dark red in color, roughened and covered with flakes of plastic lymph. After drainage, iodoform was dusted freely over the peritoneal surfaces and the wound closed. The patient's subsequent history was unsatisfactory. Vomiting was a continuous symptom, and death occurred July 6th, nine days after the operation.

At the autopsy it was found that an acute attack of peritonitis had followed the operation. Extensive adhesions existed along the course of the colon; the diaphragm on the right side was welded to the liver, and on the upper surface extensive adhesions to the pulmonary pleura had been formed. The lower lobe of the right lung was infiltrated with nodules of miliary tubercle; the left lung was normal.

This case is reported because the number of cases of chronic peritonitis on record is limited in which abdominal section has been performed. While tubercular peritonitis is a most serious disease, yet the process may become latent, as is so familiar in tubercular pleurisies in the course of phthisis. Just as the gravity of tubercular pleurisy depends upon the pulmonary lesion, so the gravity of tubercular peritonitis depends upon the extent of the frequent antecedent lesions present in the bowels and to the impairment of the functional activity of the digestive tract by the adhesions.

The indications for laparotomy would seem to be the same as those which guide us in the inflammation of neighboring serous membranes, the pleura, and the pericardium. Incision should be avoided in tubercular peritonitis unless the inflammation is purulent. Not only so, but when the tubercular process is present even paracentesis should be practised only in those cases in which dyspnœa, from over-distention of the serous sac with fluid, threatens life. The danger of operative interference in tubercular inflammation of serous sacs is, that the inflammatory process nearly always becomes purulent.

DR. OSLER did not believe that surgical interference will ever come into vogue in the treatment of this condition, as the general condition of the patient is, as a rule, such as not to warrant surgical interference. In the case reported, the rapid reaccumulation of the fluid brought in an element which rendered it more probable that incision would be of service.

DR. W. G. PORTER said that some six months ago a patient was admitted to the Presbyterian Hospital with a considerable collection of fluid in the abdomen, and on palpation a growth could be felt, the exact nature of which he could not determine. It was decided to make an exploratory incision. On opening the abdomen an extensive tubercular peritonitis was found. Since the operation, the woman has remained in about the same condition as previous to it.

DR. DEFOREST WILLARD read a paper on

REMOVAL OF FOREIGN BODIES IN THE URETHRA AND BLADDER BY LITHOLAPAXY EVACUATOR WITH LARGE, STRAIGHT, OPEN-ENDED CANULA.

His object in bringing before the Society the subject of urethral and vesical foreign bodies was simply to emphasize the value of the evacuator (ordinarily used in rapid lithotrity to extract the calculous fragments) for removing other more or less solid substances that have found their way into the urinary tract, either by accident or design.

About one-tenth of inserted foreign bodies will be spontaneously expelled, but when the *vis a tergo* of the urine fails to wash out either a calculus or an object inserted through the meatus, the safest and surest plan is to attach to an ordinary litholapaxy evacuator (Bigelow's or other improved pattern) a large, straight tube, which is open at both ends. It contains a movable stylet for ease of introduction. The size should be the largest that the urethra will possibly admit (after nicking the meatus, if necessary), say French, No. 29 or 30; American, No. 19; English, No. 16, for adults; children in proportion. The possibility of the passage of the body through the tube should be determined, if possible, by actual trial, provided a similar piece can be obtained. Rarely will any bougie larger than the above-named size be found in the bladder or urethra.

The method has been so satisfactory in his hands, that he always resorts to it with confidence, to the exclusion of all other primary devices.

If lodgement has occurred in the urethra, the canal must be firmly closed by finger pressure behind the object, while the metallic tube is slid down and carefully caused to engage the catheter or other mass within its calibre, when the bulb of the instrument is slowly compressed until the water has distended the urethra to its fullest limit, thus liberating the body, when suction is suddenly applied while the penis is stretched forward. Unless the mass be firmly caught and imbedded in a pocket, this manœuvre rarely fails after a few trials. The quantity of water that can be contained in the urethra is so small that the body may require two or three efforts to withdraw it the whole length of the instrument. The water should be injected very slowly,

but the suction current must be made forcibly. Inspection of the rubber tube can be made through the upper opening without detachment of the catheter.

Avoid employing forceps until unsuccessful with the above method, but when necessary to be used, the superiority of the canula again asserts itself. The forceps can be manipulated through its calibre, and if the object be compressible enough to pass the bore, withdrawal can be accomplished without the slightest injury to the mucous membrane. Objects of larger size than this tube can seldom be withdrawn with safety by any method save cutting. Hairpins can be compressed through the walls of the urethra, and their points passed into the calibre, when they can be completely pushed within the bore and easily withdrawn. Beads, peas, pebbles, etc., will easily enter the canula by suction. Catheters, wires, etc., will usually require the assistance of forceps. Barbed heads of grain can also be ensheathed and withdrawn by this device.

If the object has passed into the bladder, the evacuator becomes an even more essential aid. A straight instrument is not always easy of introduction, but the security gained against subsequent urethral injury abundantly repays for the trouble. If a flexible or spirally cut obturator is used, the introduction is rendered much easier. The tube is used first as a sound to discover the offending body, when the bulb of the evacuator is first slowly compressed, so as not to disturb the fragment. Suction should always be made quickly, so as to draw the body with force. Failing, the water is next ejected with more energy, so as to move the fragment into better line with the calibre, suction being again rapidly applied. The hard substances will not be driven against the sides of the bladder with any more power than are calculous fragments, and unless consisting of broken glass will not be as angular. If the body is rounded, and of size that can pass the bore, it will in a few moments be found in the bulb. If very long, like a catheter, or pencil, or wire, the chances are not so good that it can be brought into line with the calibre of the tube. As a bougie ordinarily breaks at or near the eye, however, its passage is more than probable. Failing, after ten minutes of gentle trial, a lithotrite should be introduced if the body is a bougie or pencil, and is capable of being cut or pinched in two, and the division made. A cutting lithotrite, like Caudemont's, is manufactured, but is seldom found among the paraphernalia of surgeons, and the fenestrated instrument of Thompson is far safer. If the bougie is old and brittle, as is presumptively the case, such division with a lithotrite is easily accomplished. The segments can then be sucked out, and their total length carefully compared with the remaining portion or lost body. Every particle must be secured, lest it form the nucleus of a future calculus. Even the broken jaw of a lithotrite might be drawn into the bore.

Should these manipulations fail, there are two forms of forceps which he has had made of just sufficient length to be slightly protruded from the end of the tube. In the one, the jaws open by a spring, as in the old Halles' forceps; and in the other, the jaws are worked by handles, as in the Mathieu and Gross, and "alligator" patterns. Careful attempts can now be made to seize the body and extract it through the catheter. If small enough to be brought through, it is a great satisfaction to know that no possible injury can be done to either the neck of the bladder or the urethra, as is so likely to occur when a body is extracted in the jaws of a lithotrite. Necessarily only a small proportion of introduced objects can be removed per urethram, and Dr. Willard holds that any foreign body too large to pass the calibre of this No. 29 tube, unless it be very soft and pliable, should be removed by cystotomy, either perineal or suprapubic.

He summarized his views as follows:

1. The litholapaxy evacuating tube, large, straight, and with open end, is the surest and safest instrument for the removal of foreign bodies from either urethra or bladder.

2. The fenestrated lithotrite should be employed to break up all bodies capable of division.

3. Incision of urethra or bladder is safer than a tear of the neck of the viscus or of the canal.

4. The suprapubic and median perineal are the safest routes of entrance to the bladder when suction fails.

5. Forceps should be used with the greatest care, and always through a straight tube, which insures protection both to the urethra and neck of the bladder during both exploration and extraction.

CORRESPONDENCE.

THE AMERICAN PUBLIC HEALTH ASSOCIATION MEETING.

THE fifteenth annual meeting of the American Public Health Association at Memphis, had before it papers and discussions that cannot but be of great service for the progress of sanitary science and art. The presidential address of Surgeon Sternberg had in it many suggestions as to practical administration, besides its valuable outline of the progress of knowledge as to the relations of microörganisms to disease. As it is published in THE NEWS, we need not enlarge upon it.

The list of general subjects opened with two brief papers by Dr. E. M. Hunt, of New Jersey. The first of these, on the "Origin of Some Diseases," also appears in THE NEWS. Its contentions as to the possible origins of some diseases caused a lively debate, in which various views of agreement or dissent were expressed. The second paper discussed prophylaxis as applied to some diseases. It sought to show that antecedent medication had in practice prevented or limited some diseases and was to be reckoned as one of the methods for checking many diseases and preventing them from becoming epidemic. In addition to citations from individual experience, the experiments in preventing anthrax which were tried by Dr. Cast for the Local Government Board, were debated with the facts as to their successful issue. Two short papers followed, by Dr. Hiersch, of New Hampshire. The one treated of the care of deceased bodies and the modes of protection from too rapid interments, and the other advocated the inspection of all animals slaughtered and of all animal foods, in the interest of health.

A paper of much value was presented by Surgeon J. S. Billings on "Some Forms of Vital Statistics, with Special Reference to the Needs of the Health Department of a City." The paper especially commended

the machine for tabulating statistics recently invented by H. Hallerett, which, by means of an electric arrangement and a punched card system greatly facilitates the various combinations into tables.

On the second day the first paper offered was "On the Importance of Protection to the Meat Supply of the Country." Dr. Azel Ames presented many statistical facts and arguments showing that the meat supply was decreasing in quantity and quality and that animal diseases were causing great ravages. It is certainly time that the subject should be considered in its sanitary as well as in its economic bearings.

The most of the day was devoted to the consideration of quarantine systems. Dr. Rauch, of Illinois, opened with a paper presenting some of the defects of our present system and the shortcomings of particular stations. He urged a closer relation between the States and the General Government, contending that each quarantine was of National rather than of State import and urging for consideration the question whether a National system should not be adopted. He was followed by Dr. Montizambert, the Health Officer who guards the St. Lawrence. He showed how the Canadian system was placed under the charge of the Dominion Government instead of being left to one province. The powers of quarantine are large, the provisions therefore good, and the administration accurate. They have separate hospitals on the ships for certain contagious diseases. No passenger can be landed unless vaccinated within seven years or unless he has had the smallpox. There is a defect, that this does not apply to cabin passengers. A compact battery of nine furnaces is employed for the disinfection of vessels with sulphur dioxide. The quarantine steamer is provided with the most complete appliances for speedy renovation of ships and all that appertains thereunto.

Dr. Bell, of New York, followed in explanation and in partial defence of the New York quarantine. He admitted many defects which had been long urged by the Health Officer, but claimed that Dr. Smith had not only made good use of what he had, but that he has rapidly and successfully improvised methods for the thorough handling of ships and passengers. Dr. Bell had himself superintended the steaming of clothing and the general fumigation. The discussion was shared by many others, and brought out most serious facts as to the defects in appliances in most of our Atlantic coast stations. In the evening, Dr. Holt, of New Orleans, gave an address as to the system at New Orleans, accompanied by a descriptive pamphlet. While the steaming and disinfecting methods are not new with him, he has shown admirable dexterity in perfecting appliances and in accurate administration. This port is probably now better protected than any other, and the States and their quarantine officers would do well to familiarize themselves with all the methods there used.

The same subject was continued the next morning in a special discussion directed by the State Boards of Health as to the feasibility of securing a National instead of a State quarantine system. It was opened by a paper read by Dr. Wyman, of the Marine Hospital Service, which was excellent, except that it had some special pleading as to the adaptability of the Marine-Hospital Service for the handling of a quarantine system. This led Dr. Holt and others to show that that service was intended for the hospital care of sick sailors, which is very different from the preventive administration needed for general sanitary service; and also to show how with the best intent there had been failure in many instances. The general sentiment did not seem to favor a national system, although it was admitted to be theoretically best. The prevalent conviction was that the General Government should put itself in close supervision or inspection of all stations; that by courtesy it should be able to find out by experts and to state all defects, and that so far as fitting up is concerned it should be a liberal contributor. For, as it was well urged, New York quarantine, for instance, is an interest to Illinois or Michigan as well as New York and is for National as well as for State defence, and so quarantines like rivers and harbors should have national appropriations.

The discussion was participated in by nearly every quarantine health officer present as well as by others well informed on the subject. It cannot but result in drawing the attention of Congress and of the whole country to the necessity of perfecting the sanitary seacoast cordon against the invasion of pestilential diseases. It is in vain to protect some sea-ports and leave others defenceless. It is in vain to have half measures and the mere forms of isolation and disinfection without the substance. The two great and possible protections against epidemics are isolation together with such cleanliness of persons and surroundings as will prevent the fertilization of disease. Both are alike important. We thus keep double guard. As to foreign diseases, isolation comes into special prominence. If the system is perfect, it is much easier to prevent diseases from transmission from the sea than upon the land. There must be systematized espionage over stations. There must be thorough fitting up with all the apparatus for isolation, disinfection, good air, good water, good food, good care, and sustained cleanliness. There must be effective administration, and we hope that sanitarians, that physicians, that Congress, that the people will not lie down at any one's bidding until the service is perfected and utterly divorced from the spoils system.

In addition to the address of Dr. Holt a part of the same evening was occupied by Prof. W. T. Councilman, of Johns Hopkins University, on the subject of malaria, with special reference to the microörganism of Laveran. His many culture experiments and inoculation tests confirm the descriptions of Laveran as well as those of Marchiafava and Celli. The changes in the blood and the different stages of the germ were well portrayed. It is pleasant to see that the work of Sternberg, Prudden, Salmon, Reeves, and others is being supplemented by new and original observations.

Next in importance was the subject of disposal of garbage as presented in the paper of Dr. Labergé, Medical Health Officer of Montreal, and in discussions and statements by Dr. Kennedy, of Iowa, Mr. Smith, of Pittsburg, and others. The chief contention was in favor of methods of cremation or incineration. Besides the forty incinerators now in use in Great Britain, some of which were described by Dr. Oldright and Dr. Hunt, descriptions were given of those operated in Des Moines, Milwaukee, Pittsburg, and Montreal. Their capacity to do the work effectually and economically and with-

out offensive gases seemed to be shown. The original cost is not far from $2000. They supply mostly their own fuel. They deal with night soil as well as with surface garbage. In our larger cities they will ere long come into use, especially in those so situated as that the refuse is greatly polluting the soil and the streams.

This subject of pollution of streams was also ably presented in the report of a committee on "The Pollution of Water Supply," by Surgeon Smart, of the Army, and by Prof. W. S. Williston, of Connecticut. These showed that in deciding as to pollution we must avail ourselves of all the facts as to quantity of sewage actually received, its relation as to distance to the intake of water-supply, the flow of the stream, and all the facts of the chemist, the bacteriologist, and the physician. Rudolph Hering, C. E., in a brief paper urged that the time had come for gathering accurate facts as to degree of dilution and effects of changes, and for the proposal of standards as to what are the limits of the use of streams and for determining which are to be used for sewerage only. Generally, rivers are not the best sources of potable water supply.

The Committee on Disinfectants reported progress, and now look upon their report as covering our present knowledge so nearly that they asked and received permission to incorporate their work in an additional volume of the *Transactions* of the Association.

For lack of time, or from the special and technical characters of the papers, some others that were offered and accepted by the Executive Committee were read by title or abstract.

From year to year the Association increases in its sphere of usefulness. While it has to do in part with popular information and with questions of practical administration, it also presents a fair share of original investigation and of the results of close observation and experience. Sanitary science and art are more and more dealing with thorough analysis and classified facts, and securing a basis for effective administration. This means results that will not only aid in the prevention of disease, but add much in the direction of skilled treatment.

MEMPHIS, November, 1887.

IS LEPROSY A CONTAGIOUS DISEASE?

To the Editor of THE MEDICAL NEWS,

SIR: I would offer an amendment of Terence's familiar line—*Medicus sum: medicini nihil a me alienum puto*—as my apology for trespassing on your columns in the case of Dr. Van Harlingen (whom I have not the pleasure of knowing), some cases of leprosy he was treating, and the Board of Health of your city, Philadelphia.

I learn from the reports in the daily newspapers of this city, that the Health Officer of Philadelphia had insisted upon the removal and isolation of some cases of leprosy which were under the care of Dr. Van Harlingen.

It would seem, from the action taken, that leprosy is regarded by the health authorities of Philadelphia as somewhat more contagious than smallpox, or the other exanthemata, and consequently I would offer the following in testimony against such an idea.

In 1880 a case of leprosy was admitted into the U. S. Marine Hospital wards at Hotel-Dieu, New Orleans. Subsequently the case was transferred to the U. S. Marine Hospital at Mobile. He was exposed to other patients, subjected to no rigorous quarantine or isolation, and no case developed among other patients.

I have often seen, during the years I was on duty in New Orleans, cases of leprosy in Charity Hospital of that city, On referring to the reports of that institution it may be found that, in 1885, there were of the different varieties of leprosy, six white and one colored patient treated. In 1884 two white patients were treated. In 1883 two white and one colored patient. In 1882 four white patients. In 1881 four white and one colored patient. The cases are treated in the hospital wards.

While on duty in Key West, Florida, in 1883, I treated a case of tubercular leprosy in a mulatto child, no isolation being considered.

In the Report of the Louisiana Board of Health for 1880, Dr. Joseph Jones has a paper on leprosy in Louisiana, and, though President of the Board of Health, does not insist upon the exclusion authorized by biblical law.

At any rate, it does not seem that the public alarm, and consequent unjust criticism of a professional man, are warranted by the lack of evidence regarding the existence in the United States of the environment, race dyscrasia, and other genetic factors which have served to make this disease the scourge of certain localities.

Very respectfully,

S. P. ARMSTRONG, M.D.,
P. A. Surgeon U. S. Marine Hospital Service.

NEW YORK, November 22, 1887.

NEWS ITEMS.

THE OFFICERS OF THE AMERICAN PUBLIC HEALTH ASSOCIATION for the ensuing year are:

President.—Charles N. Hewitt, M.D., of Red Wing, Minn.

First Vice-President.—G. B. Thornton, M.D., of Memphis.

Second Vice-President.—Joseph Holt, M.D., of New Orleans.

Treasurer.—J. Berrien Lindsley, M.D., of Nashville, Tenn.

Executive Committee.—Henry D. Baker, M.D., of Lansing, Mich.; S. H. Durgin, M.D., of Boston; J. N. McCormack, M.D.

The next meeting will be held at Milwaukee.—*Sanitary News*, November 19, 1887.

THE QUARANTINE AT BALTIMORE.—The *Maryland Medical Journal* of November 12, 1887, writes that the Health Officer of that city thinks the committee of the College of Physicians of Philadelphia has formed an imperfect judgment concerning the quarantine facilities at the port of Baltimore. He argues that the present accommodations are adequate for the proper protection of the city against the introduction of cholera at this port. We are unable to agree with the opinion of our efficient Health Officer. We fail to see how the present arrangements at Hawkin's Point could provide a suitable quarantine for a steamship load of immigrants arriving at this port with cholera on board. Seventy-five hospital beds and any number of army tents, will not comfortably

protect six or eight hundred immigrants. Unless the quarantine establishments of all American ports are taken out of the hands of our State and Municipal authorities and placed under the control of the General Government, the present shortcomings pointed out by the committee of the College of Physicians are not likely to be corrected.

THE COMMITTEE ON DISINFECTION, OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, at its recent meeting, advised essentially the same disinfectants recommended in 1885; the solution of chloride of lime was made 6℥ to the gallon instead of 4℥, as previously ordered.

PRIZE ESSAYS ON HYGIENIC COOKING.—MR. H. LOMB, of Rochester, offers one prize of $500 and one of $200 for the best essays on practical, sanitary and economic cooking, adapted for persons of moderate and small means. The award is under the auspices of the American Public Health Association.

PREGNANCY AFTER OVARIOTOMY.—A recent writer in the *Lancet* reports his attendance upon a woman in her seventh confinement since the removal of an ovarian tumor by Sir Spencer Wells, in 1875.

AMERICAN PATENT MEDICINES ABROAD.—We are informed that under the Austrian laws regulating pharmacy American patented preparations of hops and also of hypophosphites have been prohibited from sale in Vienna. A Berlin merchant was lately sentenced to eight days imprisonment for selling "St. Jacob's Oil" as a medicine.

THE TELEPHONE IN MEDICINE.—The very common use of the telephone in the business world affords a sufficient guarantee that, in spite of occasional difficulties, inconveniences, and failures in its working, there remains a substantial balance of advantage. The facilities which it has introduced into the ordinary course of domestic life have also been considerable, though the time is probably far distant when even the majority of households will possess the luxury of a telephone communication. In the emergencies of illness, particularly, there is much to be said in favor of this mode of intercourse. It is, above every other, simple, swift, and safe, and must commend itself alike for the expeditious conduct of practice and the treatment of disease. In the management of joint medical practices which cover a considerable area it is very obviously useful. Of its proved value in cases of special urgency, we need say little. A particular interest, however, attaches at the present time to what is probably its latest application. This is its employment as a part of the system of isolation, so imperative in the management of infectious illnesses. We are informed that one of the effects of the recent scarlatinal outbreak in the metropolis has been to establish, in some instances, an in-door telephone system, which, without the slightest risk of infection, brings a patient, so to speak, within touch of his friends and relatives. Whether it is to be an unmixed advantage must, of course, depend upon the discretion of those concerned. Rightly used, it may even prove a boon of some considerable curative influence. A certain gain which it confers is, of course, the comparative leisure allowed to attendants on the sick. There is no answering bells to find out what is needed, the door of the sick-room is less frequently opened, and fatigue generally, as also the risk of infection, is materially lessened. The value of this form of communication in hospitals is obvious. We would suggest its more general adoption were it not that we fear that in many cases the cost might prove a barrier. It would be easy to speak at greater length upon this topic, but it is hardly necessary when the public already recognize, at least in theory, the position of this useful invention among the amenities of life.—*Lancet*, November 5, 1887.

SOUND-BLINDNESS.—The phenomena of color-blindness are well known, and have been carefully investigated. We know that some persons can see to great distances, discern minute objects, enjoy works of art, and yet are unable to distinguish certain colors. Physiologists, and especially psychologists, have also found that there is a similar series of phenomena to be observed in connection with the sense of hearing. If a word were coined to describe these phenomena, it would naturally be "sound-deafness," but many who have written on this subject seem to prefer the term "sound-blindness."

A writer in the London *Journal of Education* uses the term "sound-blindness," and seems to have come to the subject from a pedagogic standpoint. He states that the difficulties which some persons have in learning to spell and in learning how to pronounce foreign languages suggested to him the possibility of the existence of such a thing as sound-blindness—an inability to distinguish particular shades of sound, arising from some organic defect in the ear which is distinct from deafness, as that term is commonly understood.—*Science*, November 18, 1887.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM NOVEMBER 15 TO NOVEMBER 21, 1887.

PERIN, GLOVER, *Colonel and Assistant Surgeon-General.*—Retired from active service, November 17, 1887, by operation of law.—*S. O. 268, A. G. O.*, November 17, 1887.

SMITH, A. K., *Lieutenant-Colonel and Surgeon.*—Assigned to duty as attending surgeon in New York City.—*S. O. 269, A. G. O.*, November 18, 1887.

SMITH, J. R., *Lieutenant-Colonel and Surgeon.*—Ordered for duty as Medical Director, Department of Dakota.—*S. O. 269, A. G. O.*, November 18, 1887.

HORTON, S. M., *Major and Surgeon.*—Granted six months' leave of absence on surgeon's certificate of disability.—*S. O. 269, A. G. O.*, November 18, 1887.

ARTHUR, W. H., *Captain and Assistant Surgeon.*—Granted two months' leave of absence, with permission to apply for two months' extension, to take effect on the arrival at Fort Niagara, New York, of Assistant Surgeon Paul R. Brown.—*S. O. 269, A. G. O.*, November 18, 1887.

KEAN, J. R., *First Lieutenant and Assistant Surgeon.*—Granted two months' leave of absence, to take effect about December 1st.—*S. O. 269, A. G. O.*, November 18, 1887.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING NOVEMBER 19, 1887.

RIXEY, P. M., *Passed Assistant Surgeon.*—Ordered to the Naval Dispensary, Washington, D. C.